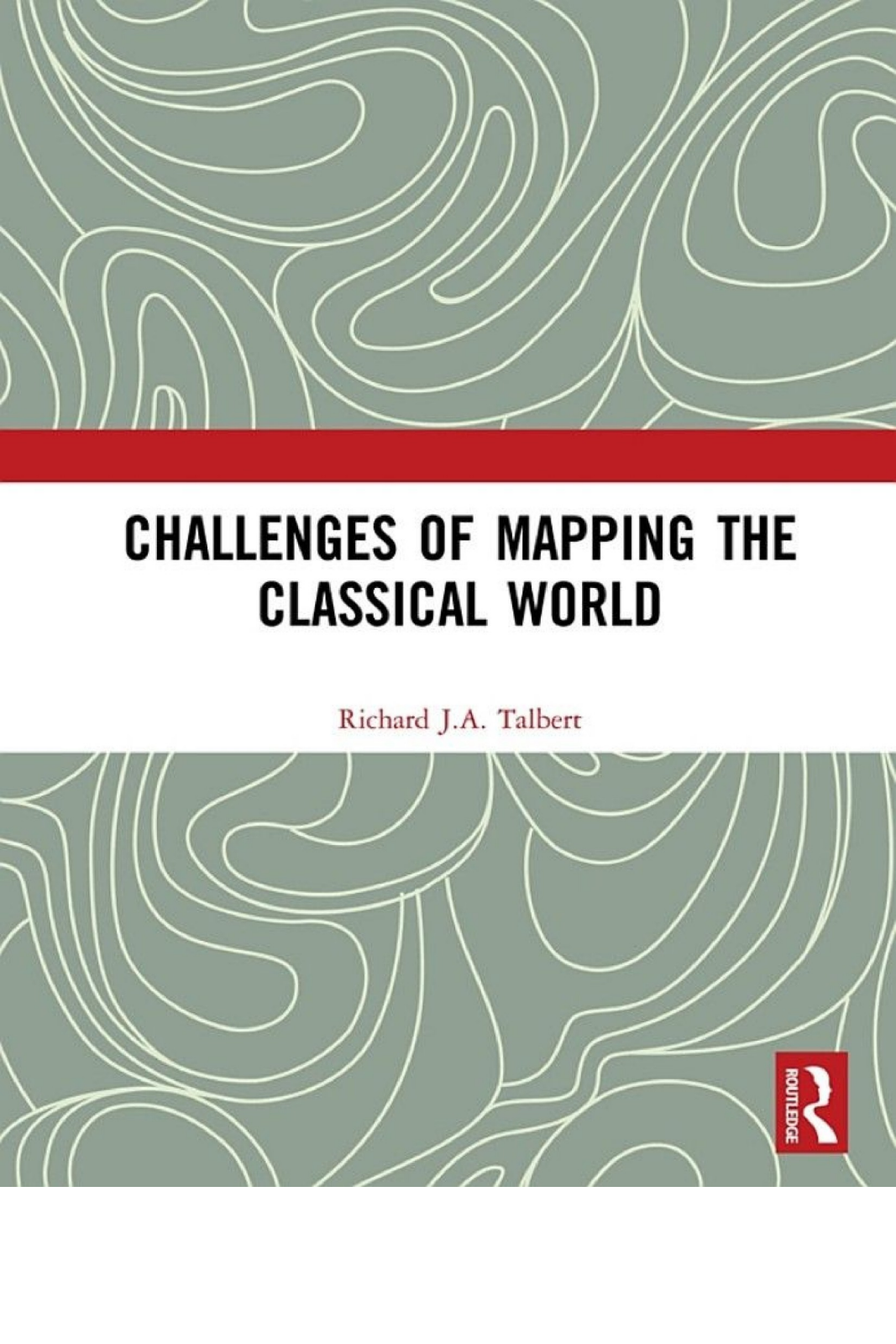




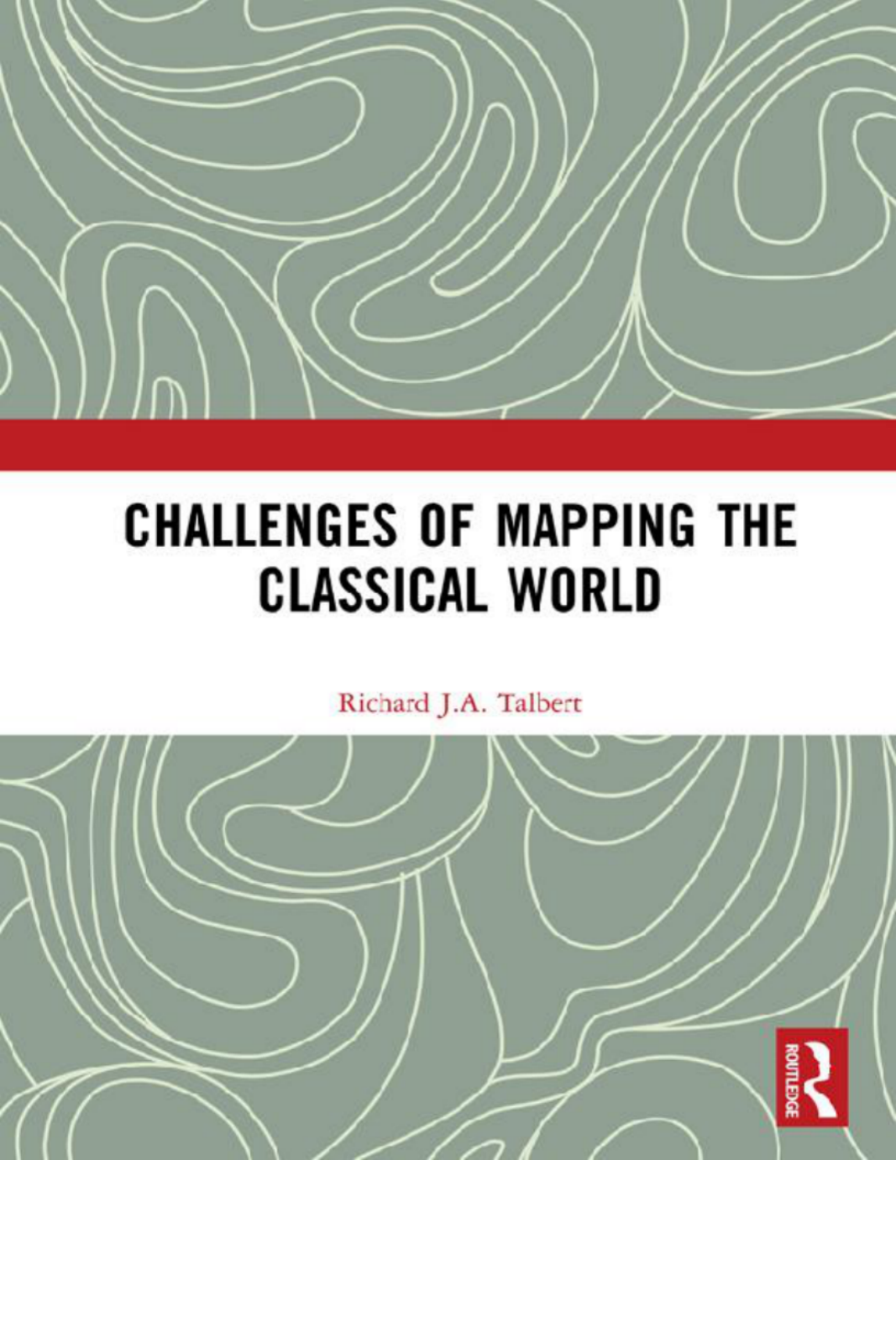
CHALLENGES OF MAPPING THE CLASSICAL WORLD

Richard J.A. Talbert



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CHALLENGES OF MAPPING THE CLASSICAL WORLD

Richard J.A. Talbert



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CHALLENGES OF MAPPING THE CLASSICAL WORLD

Richard J.A. Talbert



Challenges of Mapping the Classical World

Challenges of Mapping the Classical World collects together in one volume fourteen varied items written by Richard Talbert over the past thirty years. They cohere around the theme of mapping the classical world since the nineteenth century. All were originally prompted by Talbert's commission in the late 1980s to produce a definitive classical atlas after more than a century of failed attempts by the Kiepert and others. These he evaluates, as well as probing the Smith/Grove atlas, a successful twenty-year initiative launched in the mid-1850s, with a cartographic approach that departs radically from established practice. Talbert's initial vision for the international collaborative project that resulted in the *Barrington Atlas of the Greek and Roman World* (2000) is presented, and the successive twice-yearly reports on its progress from 1991 through to completion are published here for the first time. A further item reflects retrospectively on the project's cartographic challenges and on how developments in digital map production were decisive in overcoming them. This volume will be invaluable to anyone with an interest in the development and growing impact of mapping the classical world.

Richard J. A. Talbert is William Rand Kenan, Jr., Professor of History at the University of North Carolina, Chapel Hill, USA. As well as publishing extensively on historical cartography and other topics, he has edited *Atlas of Classical History* (now under revision), *Wall Maps for the Ancient World*, and *Barrington Atlas of the Greek and Roman World*.

Challenges of Mapping the Classical World

Richard J. A. Talbert

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This book is dedicated to the hundreds of cartographers, scholars, staff and sustainers who collaborated to create the *Barrington Atlas*

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Preface and Acknowledgements

It struck me years ago that a collection of my widely scattered writings on mapping the classical world from the nineteenth century onwards could have lasting value not just for the ancient field but also for the history of cartography. Colleagues, pupils and friends kindly endorsed this audacious supposition, and when, in 2014, I eventually sent a proposal to Michael Greenwood, then editor at Ashgate Publishing, he, too, reacted with enthusiasm. Accordingly, he and I first determined an appropriate length for the collection, and I then selected thirteen varied items written between 1990 and 2013; a single more recent one (2017) was inserted later. Among those left aside is my 2015 review in *The Geographical Review* of William Koelsch's *Geography and the Classical World: Unearthing Historical Geography's Forgotten Past* (2013), an embarrassing illustration of how geographers today may be insufficiently aware of relevant initiatives undertaken outside their own departmental confines. Needless to say, the present book is not the place for any of my writings on map-making in antiquity itself.

The fourteen items in total are presented here in three distinct groups (as the Introduction explains) that mesh well with one another. The items have been published previously, except for a substantial trio relating to the generous support awarded by the U.S. National Endowment for the Humanities to the international collaborative project – which I headed – to produce what became the *Barrington Atlas of the Greek and Roman World*, published in 2000. No one but myself is to blame for the unduly long interval between Ashgate's acceptance of the proposal and my delivery of the book. As ever, my estimate of how long it would take to clear prior commitments proved too optimistic. Meantime, Ashgate was acquired by Routledge (Taylor & Francis Group) in 2015.

Warm thanks are due to my editors – initially Michael Greenwood, then Amy Davis-Poynter – and Routledge staff; Tom Elliott, co-author of item 13; Mary Downs, for advice on presentation; George Gerolimatos, for assistance in translating the long German quotation in item 5; Lindsay Holman, current director of the Ancient World Mapping Center, for skilled help in preparing texts and images for production; Peter Raleigh, for advice and for formatting

the previously unpublished items 8 – 10; and to all the presses and journals that have granted permission for items to be republished. Last, but far from least, my wife Zandra has cheerfully tolerated the gestation of yet another book, and I am grateful as always.

Richard J. A. Talbert
Chapel Hill, North Carolina
January 2018

Introduction

The synergy on which effective map-making depends is too often taken for granted. Just as the difficulties of acquiring and organizing a map's wealth of data are easily overlooked, so also are the complexities of determining and executing its design and of steering it to publication. The digital revolution of the past quarter-century has brought only partial relief. Acute challenges of many kinds persist, and these are unavoidably compounded when a set of maps, or atlas, is called for. To produce an atlas of the Greek and Roman world as a fundamental resource for the study of classical antiquity is a grand ambition first realized in the sixteenth century. It has remained a preoccupation of scholars ever since, as our knowledge and technology have continued to improve.

When called upon in unpromising circumstances to fulfill this ambition myself during the late 1980s – with no means to predict how soon digital cartography might supplant the established film-based method of map-making – I realized how important it was to comprehend and evaluate what my forerunners had, and had not, accomplished at least as far back as the mid-nineteenth century. The making of historical atlases in general during the three centuries up to that time was to be investigated by Walter Goffart (2003) in a remarkable book which my review (item 1) finds revealing and thought-provoking; hence the decision to place it first in the present volume. Fifteen years earlier, however, I was soon to discover that map-making for classical antiquity since the mid-nineteenth century had attracted minimal attention at best, so the only recourse was to start my own investigations. The findings made over time have been written up in a half-dozen widely scattered publications of various types. In effect these contributions form a coherent group, so I now assemble them here (items 2 – 7).

There follow four items (8 – 10, and 12) relating to the American Philological Association's (APA) Classical Atlas Project, which I headed between 1988 and 2000. These first document the project's vision and planning as I explained them in the initial funding application to the U.S. National Endowment for the Humanities (NEH) in 1990. Next, my half-yearly reports submitted during the nine-year span of NEH's support from 1991 onwards summarize the project's successive stages and the challenges encountered in its

progress to completion. Many extracts from the applications and reports to NEH were reproduced at the time in newsletters and elsewhere. However, these are very scattered, even ephemeral, outlets; the full series of reports in particular has not been published previously, and can prove instructive in several respects. Last in this set of four items come retrospective reflections (2003) on the project's fundamentally important map-making dimension; these were commissioned by a cartographic journal after the publication of the *Barrington Atlas of the Greek and Roman World* in September 2000, the successful outcome of the APA's initiative.

With the switch to digital cartography from the mid-1990s came the gradual realization that the *Barrington Atlas* and its accompanying *Map-by-Map Directory* could be updated indefinitely and could also serve as the basis for mapping the classical world in many kinds of further productive ways. Thus, first among the three final items here (11, and 13–14) is my open call made in 1997 urging that a 'center' be established to develop such opportunities with use of the new technology. In response, the University of North Carolina at Chapel Hill's newly instituted Ancient World Mapping Center (awmc.unc.edu) began this work in 2000, with Tom Elliott as its founding director. The second item in the set is a contribution which he and I co-authored for a 2002 book on Geographical Information Systems (GIS) for history, demonstrating the potential scope and value of its application in the ancient field. The present volume closes with renewed attention to the concerns raised at the start, namely the persistent dilemmas of how to map the classical world most effectively, in this instance in a major historical atlas for the German *Neue Pauly* classical encyclopedia published in 2007 (an English translation followed in 2010).

A striking feature of map-making for classical antiquity which distinguishes the nineteenth century from the twentieth is the hugely influential role played during the former by a few individuals. Among the earliest of them for my purposes is the English scholar-author William Smith: he features prominently in item 2, which was written to introduce the first-ever reprint of his atlas (2013). Around mid-century, when no major classical atlas had been produced for decades past, Smith not only grasped the potential value of one for his mission to open up the ancient field and broaden its focus, but he also had the courage and vision to break with tradition by insisting that in the choice of maps coverage of landscape should take priority over historical themes. It was Smith's double good fortune that he could enlist both a wealthy publisher, John Murray (III) in London, prepared to fund this expansive plan, and an outstanding scholar-cartographer, Carl Müller in Paris, willing and able to carry it through to completion over a twenty-year period.

That outcome in 1874 was a triumph not to be matched until the appearance

of the *Barrington Atlas* in 2000. Nonetheless, in several respects the impact of the triumph was to prove disappointingly slight. Given the expense of engraving the maps on copper-plate for sharpest presentation, rather than lithographing them, the high price set for the atlas limited sales drastically. Murray's princely outlay was never recouped, and even the firm's eventual efforts to reuse some of the materials in publications intended for students achieved only modest success with the appearance of *Murray's Handy Classical Maps* around 1900 (treated in item 6). Moreover, the value of the atlas as a scholarly resource was all too soon reduced by the rapid improvement of geographical knowledge during the last quarter of the nineteenth century, and by the marked rise in discoveries of ancient sites, inscriptions and other materials.

I first discussed Smith's atlas in the course of tracing the development of atlases and map series of the classical world from the 1870s to 1990. It was only after this contribution (item 6) had gone to press for publication in 1992, however, that the survival of correspondence relating to the making of Smith's atlas was generously brought to my attention by Virginia Murray. The exchanges here between himself, Müller, Murray and the engraver in Paris, Jacobs, give exceptional insight into key aspects of interest to classicists as well as to historians of cartography: the planning of the atlas; the cost and difficulties of engraving maps, and of coloring them by hand once printed; and the need to curb Müller's perfectionist indifference to expense with regard both to coverage and to correcting maps once engraved.

Having published this correspondence in 1994 (item 3), I was more than surprised the following March to stumble across some of Jacobs' actual plates discussed there stored in the vault of the Edinburgh cartographer Bartholomew, just prior to the firm's breakup and removal from its celebrated Edwardian premises on Duncan Street. These plates furnish tangible confirmation of the concerns expressed by Jacobs in his detailed letters. Subsequent investigation – explained in item 2 – has led me to think that the plates were transferred from London to Edinburgh during the 1890s when Murray and Bartholomew were preparing to collaborate on a classical atlas for students, an initiative (as it turned out) never realized. However, the plates remained safely in Edinburgh, even if a century later there was no recollection of them being Murray's property.

Any maker of a classical atlas beyond the textbook level will become familiar with the 250 or so itineraries gathered in the curious Latin compilation traditionally called the *Antonine Itinerary*. In engaging with it, I was for long surprised that no detailed map of its routes had been made either by an editor of the text (beginning with Peter Wesseling in 1735) or apparently by any other scholar. A further chance discovery altered this perception, however. I

encountered the forgotten collection of itineraries (including the Antonine) published in Paris by Emmanuel Miller in 1845. With it came nine large engraved maps which can be mosaiced together, the painstaking work of Pierre Lapie. They span the great arc of the Roman world from the British Isles to Mesopotamia, and show all the itinerary routes in detail. There was good cause, therefore, to alert scholars (in item 4) to this masterpiece of cartography, but the puzzle of why it should have been so unjustifiably ignored also merited discussion. The reasons I infer bear out one general conclusion drawn (in item 1) from Walter Goffart's pioneering investigation of historical atlases produced between the mid-sixteenth and mid-nineteenth centuries, namely that the quality and importance of a cartographer's work are by no means the only factors to determine the level of attention and respect it will gain. Rather, the attainment of success has proven a more complex, elusive and unfair quest.

As a cartographer of the ancient world, Carl Müller came to be outdistanced by his fellow German and near-contemporary, Heinrich Kiepert. Even so, amid many other preoccupations, Kiepert rashly kept postponing his lifelong ambition to produce a definitive classical atlas. He did not embark on it until well into his seventies, and before his death (aged eighty-one) in 1899 he was able to publish only six of the thirty-six maps planned. Fortunately, he could rely upon his son Richard, a cartographer of distinction in his own right, to continue the work. This Richard did at a slow but steady pace, so that by his death in 1915 a total of twenty-five maps had been published. He then had no successor; a later attempt to continue was soon cut short by World War II, and the atlas remains unfinished. Unlike Müller's work for Smith, however, it was never forgotten by scholars. This is one reason, no doubt, why its twenty-five maps were reissued earlier than Smith's atlas: I contributed the introduction (item 5) to that reissue in 1996.

Heinrich Kiepert is the central figure in a 2016 book by Ségolène Débarre which traces his tireless efforts to map Asia Minor over half a century (1840s–1890s), in collaboration with many others. As my review stresses (item 7), Débarre's study provides an invaluable demonstration of the difficulties faced at that time by explorers and cartographers in territory outside the countries (still relatively few) where a systematic trigonometric survey had been commissioned by the state. A current project of my own is to elucidate the surprisingly wide and long-lasting impact of Heinrich Kiepert's efforts as synthesized by his son Richard in the twenty-four-sheet series (1:400,000) *Karte von Kleinasien*, first published between 1901 and 1907.

For the period up to World War I, analysis and assessment of the atlases planned by Smith and Kiepert provide the main focus in item 6 (1992) which, as already mentioned, traces the development of atlases and map series of the classical world published between the 1870s and 1990. On the technical side,

formative new features of the post–World War I cartographic environment included aerial and (later) satellite photography, film-based methods of production, versatile color printing, and series at uniform scales. For compilation, dependence on heroic individuals now typically gave way to collaboration by teams of regional experts, along with institutional sponsorship and funding. Yet even with the combined force of these changes, not to say improvements, successful outcomes remained dependent on sound planning and its satisfactory implementation. In retrospect, what appears especially damaging to the advancement of mapping for classical antiquity after World War I is that the major initiative from the late 1920s, the international *Tabula Imperii Romani* (TIR), failed to progress as intended, despite success in some respects and widespread persistent hope of more.

In the course of planning what became the *Barrington Atlas* it was essential to gain a clear sense of the strengths and limitations of TIR's efforts to map the Roman world at a uniform scale. However, no extended account of the project's genesis, growth and successive vicissitudes over sixty years had ever been published. Hence, item 6 considers TIR at greater length than any other atlas or map series. The economical method devised for the creation of its maps – physical-landscape film elements of a modern international map series provide the base, with Roman data then superimposed – was a brilliant one, which the *Barrington Atlas* would also follow. Even so, the principle adhered to for international cooperation – that nations take exclusive responsibility for mapping their own territory – turned out to shackle TIR more than to advance it. Weak direction and lack of funding compounded the slippage and led to a loss of cohesion that has never been regained, although the project still continues (visit www.uai-iaa.org/en/publications?project=6).

By contrast, two other large projects, both launched during the 1960s and both ongoing in 1990, were free of such limitations. The scope and chronological range in each instance corresponded no more than partially to those envisaged for the *Barrington Atlas*, but nonetheless both projects offered potential models to consider. The Austrian *Tabula Imperii Byzantini* was inspired by TIR, although its map bases were created less economically, and its mass of scholarly documentation acted to overshadow cartography as the primary purpose. This project, too, still continues (visit oeaw.academia.edu/TIBTabulaImperiiByzantini). The *Tübinger Atlas des Vorderen Orients*, on the other hand, was nearing completion in 1990, having pursued a thematic approach for the most part, with minimal concern to map landscape; for a listing of its maps, visit the publisher's site reichert-verlag.de/tavo-karten. This project strongly influenced the character of the *Neue Pauly* historical atlas of the ancient world discussed at the end of the present volume (item 14).

The latest classical atlas discussed in item 6 is that of Nicholas Hammond

published in 1981. The brief remark in its Preface that an earlier attempt by him to meet the need for such an atlas “was abandoned by the Oxford University Press on the grounds of expense” has since been given context by Terry Hardaker in *The History of Oxford University Press* vol. III (2013). He writes from personal experience as editor in the loss-making cartographic department of the Press from 1965 until its closure in 1981:

In May 1972, a long-cherished dream of Roberts – the *Oxford Classical Atlas* – was abandoned, prompting loud howls from a distinguished list of academic contributors that “mere finance” should kill a worthy project. But “mere finance” was destined to become the overriding factor in the struggle for the department’s survival.

(pp. 502–503; cf. 773. The classicist Colin Roberts headed the Press from 1954 to 1974)

It is much to Hammond’s credit therefore that he was eventually able to publish with Noyes Press, New Jersey, the same work – broadly speaking – that he had planned for Oxford (information kindly furnished by Terry Hardaker). However, its imbalance between coverage of landscape and historical themes recalls to mind William Smith’s stand on this issue over a century earlier. Altogether, Hammond’s atlas could be seen to offer telling confirmation of how inadequate the mapping of the classical world had become by 1980.

When the plan – or Narrative Description – for the APA Classical Atlas Project which I presented for initial funding in 1990 (item 8) is read next against the background of items 1 – 7, the guidance gained from the strengths and limitations of earlier initiatives should be unmistakable. There follow the detailed Instructions (item 9) to be issued initially to around seventy compilers along with physical landscape film elements and other materials. The Instructions convey the seriousness and complexity of the task that these regional experts were being called upon to accomplish – most of them scholars with next-to-no previous cartographic experience, and of course with none of today’s digital tools to provide assistance. Predictably enough, certain modifications to the Instructions came to be made as the project advanced; for example, it was resolved to mark the whereabouts of major finds, though only *beyond* areas of Greek and Roman settlement. But altogether such changes were minor. By the same token it is fair to say that overall the project’s goals remained constant: those put forward in 1990 were met by the *Barrington Atlas* as published a decade later.

Naturally, at the outset there could be no knowing how smooth or stony the

path to achievement of those goals might turn out, let alone just how costly. My half-yearly reports to NEH covering the period August 1991 to May 2000 (item 10) convey the main concerns at every stage and the steps taken to address them. I reflect further on my dilemmas with specific reference to map-making in item 12, published in 2003; needless to add, no one then could have imagined that the *Atlas* would be reissued as a \$15 app for iPad a decade later. The reports, to be sure, are positive summaries crafted for a funding agency which expected timely progress, submitted by a project always fearful of foundering for lack of funds to continue. The inescapable strains and setbacks of a constant search for support were not to be dwelt upon. As it turned out, work never did have to be suspended because it could not be paid for, although that alarming prospect loomed more than once. Only in 2000, on publication of the *Atlas*, did a shortfall occur, which eventually was covered after further struggle. In total, the project cost over \$4.5 million. Like it or not, “mere finance” always mattered.

The volume ends not only with reflections on map-making for the *Barrington Atlas*, but also with a demonstration of how the Ancient World Mapping Center, headed by Tom Elliott and funded in part by a NEH Challenge Grant, at once embarked upon exploiting the data from the *Atlas* and its Directory with the tools of the new digital technology (items 11 and 13). These initiatives, too, have been more and more productively realized in ongoing teamwork involving Tom and many others at the Center and elsewhere. “Pleiades”, a web-based collaborative system initiated at the Center to update the *Atlas*, has developed – again with NEH’s support – into a leading resource of international importance (pleiades.stoa.org). Equally valuable, and as widely used for map-making, is the web-based GIS interface and digital atlas “Antiquity À-la-carte”, designed by Ryan Horne (awmc.unc.edu/wordpress/alacarte/). The versatility and sophistication of such resources have increased in step with digital technology’s astonishing advances (see the Center’s annual reports on its website), and that synergy is sure to continue. Nonetheless, as this volume attests throughout with reference to the past century and a half, the fact remains that effective cartography will always depend on much more than technology alone.

Walter Goffart's *Historical Atlases: The First Three Hundred Years, 1570–1870* (Chicago and London: The University of Chicago Press, 2003). Review in *History Today* December 2003, p. 58

‘There is no how-to literature for potential [historical] atlas-makers,’ claims Walter Goffart in his introduction to this remarkable book. He is right, and having survived the making of a large such atlas, I can supply one reason why this is the case: few considerate scholars who have successfully created a historical atlas would be inhumane enough to wish the same degree of suffering upon others. Experience has taught us survivors that the task will prove infinitely more challenging, more costly, and more time-consuming than we ever anticipated at the outset. Even so, for 300 years beginning in the late sixteenth century – when sets of maps comprising an ‘atlas’ were first issued – hundreds of attempts were made in western Europe, and this is their story told (amazingly) for the first time. It is a parade of famous names (Ortelius, Speed, d’Anville, Spruner, *et al.*) amid a host of forgotten ones. Professor Goffart earns admiration and gratitude for discerning the story’s potential, and for skillfully reconstructing it by means of tireless researches through many of Europe’s great map libraries. The learning distilled into his chapter endnotes and the concluding hundred-page catalogue of maps and atlases is prodigious. His own established reputation stems from study of the Middle Ages, and one of the book’s strengths is its recurrent attention to the mapping of this period as a source of illustration and evaluation. Of the six chapters, the even-numbered ones focus on how the Middle Ages were mapped in the sixteenth, seventeenth, eighteenth and nineteenth centuries.

Overall therefore, with this fresh insight, should we be impressed by the development of the historical atlas as Goffart charts it? Both yes and no, I think. Yes, it’s surely good to see the gradual realisation that the Middle Ages

are a substantial span meriting attention in its own right, rather than (as was the typical view until the eighteenth century) just a tedious interlude between antiquity and ‘modern’ times. Detaching this span from the classical period – so long accorded preeminence – and appreciating its importance and distinctiveness, were vital advances in historical consciousness.

From a cartographic perspective, by contrast, the impression that emerges must be less favourable. The more things change, it seems, the more they stay the same. Throughout Goffart’s 300-year period no historical atlas maker could evade the intractable problems of how many maps to offer, of what size and complexity, with which themes or timeframes, and accompanied by how much explanatory text, if any. At what point, moreover, does a single map’s timeframe extend too far to remain meaningful, because so much change has to be reflected within it? Equally, how are movements (barbarian incursions, for instance, or crusades) to be represented, if at all, on a map that is perforce static? Goffart demonstrates that ideal solutions to these issues had not been found by 1870, and that there was little agreement on what an ‘atlas’ should comprise. Even today, the computerisation of cartography is no panacea: it hugely enlarges the mapmaker’s capacities, but this expansion merely compounds the difficulty of choosing among the array of mapping options. Worse, the experience of historical cartographers in Goffart’s period – most of them conservative individuals, working in isolation – only confirms that life is unfair. Fame and fortune were not guaranteed to the atlas maker who did the most research and created the maps that gained highest approval among experts. Time and again, work that was praised survives only in a single copy or not at all. Meanwhile one of the most successful historical atlases was that of an enterprising ‘unreconstructed Bonapartist,’ Emmanuel de Las Cases (A. Lesage), whose ‘vast omissions, elementary errors, and inferior maps’ were the despair of reviewers; yet, with its unconventional mix of components (history far outweighing geography), his atlas was repeatedly revised, reprinted, adapted, translated and pirated throughout the first half of the nineteenth century, and it made an impoverished aristocrat wealthy.

While Goffart’s book is to be highly recommended, prospective readers should be warned that its rapid appraisal of multiple atlases – in [chapters 1, 3](#) and [5](#) especially – can become dry at times, even with the relief offered by the well-captioned illustrations. The addition of a timeline would have helped readers maintain their bearings. What I missed, too, was greater concern to set the atlases more fully in context. To what degree did the growth of education, as well as curriculum changes, influence historical mapmaking? What difference did advances in printing make – lithography, for example, from the early nineteenth century, or steel-facing from the late 1850s, which permitted a far larger number of copies to be printed from an engraved copper-plate than

previously? Atlases typically reflect a collaboration of publisher, scholars, engravers (whose eyestraining labour could take years), and hand-colourists. The resulting ambitions, tensions and compromises (not to mention delays and financial risks) can be splendidly illustrated from William Smith's monumental *Atlas of Ancient Geography Biblical and Classical*, the work for which began in the 1850s. The correspondence archives of the publisher, John Murray, reveal much of its progress in vivid detail (see *Imago Mundi* 46: 1994), and even the actual copper-plates miraculously survive, now in the safekeeping of the National Library of Scotland. Goffart's book leaves me with a deeper respect than ever for the herculean collaborative achievement that this historical atlas, and others before it, represent.

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S	17	Italia inferior (2pp)
J	20/21	Greece/Doric migration; Greece/Persian Wars. 2 maps (2pp)
J	24	Northern Greece (2pp)
J	26	Peloponnesus (2pp)
W	29	Asia Minor (2pp)
W	33	Aegyptus (2pp)

2

William Smith and George Grove, eds., *Atlas of Ancient Geography Biblical and Classical (1872–1874): Introduction to the 2013 Reissue* (London: I. B. Tauris, 2013, pp. v–xii)

Of the many celebrated reference works published by John Murray in London under the editorship of Dr William ‘Dictionary’ Smith, the monumental and visually striking *Atlas of Ancient Geography Biblical and Classical* (completed in 1874) is the rarest by far. The mighty trio of works by Smith that preceded the *Atlas* were advertised as his *Encyclopaedia of Classical Antiquity* in six volumes: *A Dictionary of Greek and Roman Antiquities* (first edition completed in 1842), *A Dictionary of Greek and Roman Biography and*

Mythology (completed in three volumes, 1849) and *A Dictionary of Greek and Roman Geography* (completed in two volumes, 1857). The *Atlas* was designed to ‘illustrate’ both these three works and Smith’s *Dictionary of the Bible* (completed in three volumes, 1863). The *Atlas* is little known and has never been reprinted; it is a particular pleasure to introduce this handsome new edition. From multiple perspectives, it represents a breathtaking accomplishment on the part of all those who compiled (or ‘constructed’, to use Smith’s choice of verb) the maps and engraved and printed and coloured them. Moreover, it reflects the boldest of visions on the part of Smith and his publisher, not to mention an immense financial commitment by the latter, much of it never recovered. The genesis of the *Atlas*, as well as its development over a long period of preparation, needs to be elucidated. Its relative failure also calls for explanation, in particular the reasons why the customary efforts to reuse and abridge its materials in associated later publications showed so much less success than proved the case with Smith’s dictionaries.

Two mainsprings for the *Atlas* can be identified. Fundamental on the one hand is the long-term productive collaboration of the tireless scholar-author William Smith (1813–93) with the publishing firm of John Murray.¹ The initial contact is plausibly reckoned to date to 1843, when John Murray (III, 1808–92) took over the firm on his father’s death.² Equally formative on the other hand is Smith’s over-arching conception of the three classical dictionaries and their nature. This dates to earlier, with an announcement of them as a planned set appearing in the *Publisher’s Circular* on 1 January 1840. They were designed to be innovatory not only for disseminating improved knowledge in an accessible form, but also for fostering a fuller and more satisfying approach to classical studies than the narrow philological focus traditionally offered by instructors. In addition, a novel and especially attractive feature of the dictionaries was the increasing inclusion of illustrations (usually woodcuts), showing coins in particular.

The first announcement that an associated atlas was in prospect occurs at the end of the Preface in the first volume of the *Dictionary of Greek and Roman Geography* (1854). Here, Smith explains that this atlas would be ‘on a sufficiently large scale to be of service to the more advanced student’. Later, his Preface to the completed *Atlas* (dated November 1874) states that it had been 18 years in the making. Random survivals of correspondence reveal that by 1852, if not earlier, discussion had opened between Murray, Smith and Edinburgh publisher A. Keith Johnston (1804–71) about whether a classical atlas envisaged by Johnston might meet the needs that Smith had in mind for

‘illustrating’ his classical dictionaries with an atlas.³ It was evidently a modest school atlas that interested Johnston, comparable to others already published by his firm. Nonetheless, acknowledging that Smith might want a larger work of more extensive scope, he expressed willingness to embark upon both in tandem with the hope that costs could be saved. Smith himself, it transpires, had been thinking not just of a large classical atlas to be associated with the *Dictionary of Greek and Roman Geography*, but also of a smaller one designed for users of various abridgements of his major dictionaries that were issued in the late 1840s and early 1850s.

For whatever reasons, however, this discussion of collaboration evidently led nowhere. All we know is that Johnston proceeded to publish his own quarto *Atlas of Classical Geography* in 1853. We can also be sure that, despite setbacks and delays, Smith did not abandon all thought of an atlas. Far from it. The next relevant letter to survive – from Smith to Murray in March 1856 – reveals that an approach made by Smith to ‘Müller of Paris’ had received a favourable response accompanied by a specimen map:

I have read Müller’s letter attentively and have looked carefully at the Map. I am very much pleased with both, and am convinced that we have got hold of the right man. I feel sure that with careful editing on my part, we shall produce an Ancient Atlas not only far superior to any yet existing (for that is not saying much), but one which will meet the requirements of the best scholars, and which will be a credit to all parties concerned in it.

As you are in Edinburgh, you can, if you think proper, show the Map to Keith Johnston, and ask him for an estimate of the expense of engraving. But I should much prefer having it executed in Paris under the eyes of Müller, unless the cost of having it engraved at Paris greatly exceeds Johnston’s charges. If the Paris engravers would take our map with another for 740 francs [about £30], I should think the charge would be reasonable.

‘Müller of Paris’ was the classicist Carl (or Karl, or Charles) Wilhelm Ludwig Müller (1813–94),⁴ born in Clausthal (Hannover) and educated at Göttingen University. From about 1840 he resided in Paris as one of the many Germans recruited to work for the academic publisher Firmin-Didot; around the mid-1860s, it seems, he returned to Göttingen and spent the rest of his life there. Despite his formidable talent and prodigious output of scholarly work, Müller never held an academic position, and would appear to have remained an independent scholar working for fees. He evidently kept himself out of the limelight by choice. This elusiveness is only compounded by his consistent failure to use either of his middle names, so that catalogues and bibliographies are prone to muddle him and other Müllers. For Firmin-Didot he had brought

the first of the two volumes of an edition of the Greek geographer Strabo to publication in 1853, followed in 1855 by the first of two volumes of the ‘minor’ Greek geographers (*Geographi Graeci Minores*) accompanied by a set of 29 elaborate pull-out maps.⁵ These were engraved in Paris by different specialists (as was the norm), S. Jacobs for the line-work, Isidore Dalmont and three others for the lettering.⁶

No doubt it was such impressive cartography which brought Müller to Smith’s attention. Whether it was only in connection with a scheme for a superior ancient atlas that he established contact with Müller may be doubted. In all likelihood he had learned from Murray that there was also pressing need for a suitable cartographer to assist in making the maps for George Rawlinson’s *History of Herodotus* (four volumes, 1858–60); the first maps that correspondence shows Müller tackling for Murray (later in 1856) are these. As was only to be expected, two were eventually re-used in Smith’s *Atlas* (as Maps 3 and 21). In any case, by 1858 Müller was at work on the *Atlas*.

Between them, no doubt, Smith and Müller settled upon the broad cartographic principles that are laid out in Smith’s Preface, ones characteristic of his consistent commitment to furnishing readers with materials that are clear, accessible, and useful for a fuller understanding of antiquity – in this instance its physical landscape above all. The fundamental concern is ‘to give a complete set of maps of the Ancient World on a scale corresponding in size to the best Atlases of modern geography’; it would be the first attempt ever made to do so, Smith states (correctly). Maps of such large size allow ‘space for exhibiting the natural features of each country, and for adding, wherever it was possible, the modern names underneath the ancient ones.’ Moreover, this was not to be an atlas that devoted the majority of its maps to historical themes, and only a minority to ‘the geographical representation of particular countries’. Taking that approach, ‘the number of such historical maps might be increased indefinitely, without adding in any way to the scientific value of an Atlas.’ Instead, the emphasis should be reversed:

in the present Atlas each country is delineated in a separate map on a large scale; but we have also given in addition a sufficient number of Historical Maps on a smaller scale.... The Atlas likewise contains plans of the chief cities of the ancient world.

Last but not least among the features to which Smith draws the reader’s attention with pride are the well-organized indexes (gazetteers), and the system – that of Keith Johnston, he acknowledges – for convenient cross-

reference between a map and its index.

Smith must also have had Johnston's work in mind when articulating his fundamental concern. The announcement on the paper cover for the Parts in which the *Atlas* was initially issued proclaims:

The Maps are of the same size as those in KEITH JOHNSTON'S ROYAL ATLAS OF MODERN GEOGRAPHY, with which the present Atlas will range.

Smith and Murray clearly continued to admire Johnston, even if they never involved him in their classical atlas. The pathbreaking shift away from privileging small-scale historical maps that Smith represents as an important step forward is specifically intended to reflect unfavourably upon the character of the only comparable recent publication, Carl von Spruner's *Hand-Atlas zur Geschichte des Altertums, des Mittelalters und der Neuzeit*, published by Perthes at Gotha in 1850, altogether a far more modest work than Smith's, even in a revised edition by Theodor Menke (1865).

Although Smith and Müller settled upon their cartographic principles at the outset, still the possibility remained that these might come into question as work proceeded; the content and layout planned initially (not known to us), too, might need to be adjusted. As it happens, we gain a vivid glimpse of such circumstances arising and the strains created. In October 1858 Müller reports to Murray that his work on eight maps of Greece (including two of the Peloponnese) was well advanced. By March 1859 – as a long letter from Müller to Smith discloses – the Peloponnese pair of maps (North and South) had been seen by Smith and Murray, and warmly praised by both. However, Murray had evidently expressed qualms at the likely cost of engraving such fine maps, and Müller (writing in French) strives to allay these fears:

After this I reach the great question of the day. Mr Murray, you say, is fearful of the costs of engraving, if maps as fine as those I have made are engraved. To reduce the expense, you wish to remove the modern names and to demolish all the plans [of cities or sites] that I have taken such pains to construct. I am obliged to give way to these decisions, and many a person would accept them all the more willingly because they simplify his work. But as in this entire affair I am guided by the interest of science rather than by motives of a purely material kind, I would not wish to bring myself to submit without having made a small attempt at rebellion. You are well aware that *per totum orbem terrarum* an ancient Atlas of any value does not exist. All the ones that publishers put on the market every year are junk (*de la camelotte*), as the French say, of neither scientific nor artistic value. So who will deliver us from all these evils if Mr Murray does not? Who else has the capacity to fund an

atlas other than the gigantic Atlas of Great Britain's publisher!

Müller goes on to propose various adjustments and economies (including retention of only one in three modern names) in what must presumably have been a flurry of correspondence, now lost, over the following months. By the time we learn more, from a letter of August 1860, it is clear that while he has won the fight to maintain the exceptional quality and scope of the *Atlas* (along with modern names), he has also consented to rein in his most ambitious hopes. In particular, it now emerges that the entire Peloponnese is to be shown on a single sheet (*Atlas*, Map 26), not two, and at the very respectable scale of 1:500,000. Athens and Central Greece also are to appear on a single sheet (Map 25), not two, making the substantial saving of two sheets overall.

If Murray imagined that, by persuading Müller to trim in these ways, he would thereby bring the costs of engraving down to an acceptable level, the letter just mentioned that he received in August 1860 must have been a rude shock. It came from the Paris engraver, S. Jacobs, presumably the one that Müller recommended to Smith in 1856, and who Smith favoured using over Johnston for the *Atlas*. Jacobs had already engraved two maps for Rawlinson's *Herodotus*, as well as arranging for them to be printed, coloured (by hand) and delivered to London, all quite satisfactorily it seems. Now, however, Jacobs' delivery of four proof copies of Müller's 'Peloponnesus' – engraved by himself (line-work) and Dalmont (lettering) – together with a letter containing his account for 4,603 francs [= approx. £177] provoked an outburst from Murray, who eventually responded (in English) in September:

While Dr Smith and I concur in giving you the highest credit for the manner in which this Map is engraved I am obliged to tell you that the price you charge for it of 4603 francs has caused us the utmost astonishment!! It is so high that it becomes impossible for us to continue with you and in future I regret to say we shall be obliged to have our Maps engraved by others. We have ascertained that the same Map might be engraved in all its details in this country for half the sum which you charge. Moreover you have committed a mistake of inserting Metres instead of Feet which depreciates the Value of the Map in England and moreover gives it the appearance of being a Servile Copy from some French engraving instead of an original drawing.

Jacobs' reply five days later survives. It counters Murray's rant with calm reason. Jacobs holds firm on his price, pointing out that it was in line with what Murray had paid him without demur for previous work, and that fine engraving was extremely time-consuming – on this map the mountains alone had taken seven months, he says. Jacobs claims that he had indicated to Müller

what the work was likely to cost, and now proposes that in future he send Murray an advance quote for any further commission. Murray had evidently not taken this elementary precaution to date. How far his outrage was a reflection of genuine surprise, as opposed to calculated bluster vented with a view to securing a discount, is hard to say. At least, to judge by what we know of subsequent engraving costs for the *Atlas*, his protestation that Müller's 'Peloponnesus' might have been produced in England for half Jacobs' price lacks credibility. It did not help either that Müller, with his scholarly perfectionism and disregard for budgets, was never restrained from demanding a stream of corrections to the engraved copper-plate, and that his specifications for colour (added by hand) were typically very complex – two further notable expenses, therefore. Jacobs even expresses to Murray his apprehension that if many further changes to the plate were called for (the conversion of figures in metres to feet especially – which was never made), it was at risk of becoming 'fatigued' and thus spoiled. We have the exceptional opportunity to see for ourselves where this very plate was 'beaten' on the reverse to make the many corrections, because (as will emerge) it survives in the Map Collections of the National Library of Scotland, Edinburgh.

Murray was placated by Jacobs to the extent that he did subsequently commission further maps for the *Atlas* from him, including 'Athens and Central Greece' for which a quote of 5,000 francs was accepted without argument in March 1861 – higher than the cost of 'Peloponnesus', as Jacobs explains.⁷ Over the next few years, however, Murray not only offered him increasingly fewer maps, but also declined one of his quotes (for Map 27). Instead Murray turned to two firms in London, those of Edward Weller⁸ and Edward Stanford (1827–1904).⁹ The reason for abandoning Jacobs can hardly be dissatisfaction with the quality of his work (which remains consistently outstanding) or even his prices. Rather, it was the realization that Müller by relocating to Göttingen was no longer close to him in Paris, the emergence of an unanticipated dimension for the *Atlas* in London (below), and the plain fact that its maps could now more practicably be engraved there.

Jacobs in any case informed Murray in September 1866 that because of ill-health he could no longer accept work from him. In two carefully prepared shipments (June 1864 and September 1866), he dispatched to Murray in London the eight map-plates that he had engraved for Rawlinson's *Herodotus* and the *Atlas*. Murray had accepted his recommendation that each should first be 'steel-faced', a relatively new process (*aciérage* in French) which made it possible to print 2,000 or so copies from a copper-plate without incurring wear that would render it subsequently unusable. If the plate were then refaced, another 2,000 could be printed; and so on. Jacobs was well aware that an engraved plate could also be preserved by transferring its image onto stone

and then printing from it. He had even done just that on Murray's instructions for the Rawlinson maps, but he maintained that this lithographic process reproduced detail poorly. Certainly it was the strong consensus at this date that, despite the far lower cost of lithography, the results achieved with engraved plates from which sheets were printed direct could not be matched by any other means; hence the *Atlas* was produced in this laborious way.¹⁰

The new dimension that the *Atlas* acquired in the mid-1860s is an extension of its scope to encompass the *Bible*, reflecting both Smith's recent preoccupations and Murray's search for compromise. From around the mid-1850s Smith, having opened up classical antiquity and set it in such sound order, next determined to do the same for the *Bible*. Among the scholars he consulted in 1856 about what would become *A Dictionary of the Bible* was Arthur Stanley (1815–81), then canon of Canterbury Cathedral. Stanley, in preparing his book *Sinai and Palestine* which Murray published the same year, had valued the editorial assistance unexpectedly provided by the polymath George Grove (1820–1900), and so introduced him to Smith as a possible assistant for the *Bible* dictionary. Grove was already employed, and successfully so, as Secretary to the Crystal Palace. But he was also a workaholic, and he proceeded to make himself quite indispensable to the work on *A Dictionary of the Bible* until its publication was completed in 1863. Overcoming periodic bouts of depression and exhaustion, he visited Palestine twice, devoted particular attention to the entries on geography and topography, and altogether either contributed or heavily revised as much as one-third of the total of 3,154 pages.¹¹

The last sentence of Smith's Preface to *A Dictionary of the Bible*, dated November 1863, announces: 'It is intended to publish shortly an Atlas of Biblical Geography, which, it is hoped, will form a valuable supplement to the Dictionary.' However long this had been his intention, it would seem that he did not take steps to implement it until the dictionary itself was completed. Grove was surely his first choice of editor. At least, we know that Smith wrote inviting him to fill that role in March 1864, followed by Murray a week later urging acceptance of the offer: 'You are the proper person to preside over such a work. No one else can do equal justice to it from your reading and practical experience.' We also know that Grove did accept.¹² What happened next, however, is unclear. It seems most likely that, once planning started, Murray grew apprehensive about the inevitable high cost of all the engraving to be commissioned. In any event, somehow a compromise was settled upon which led to the plan for a separate atlas being dropped. Instead, the exclusively

classical atlas already in preparation under Smith's editorship was to be expanded so as to offer maps that Grove would edit illustrating the *Bible* dictionary. It was with this two-section arrangement under joint editors that the *Atlas* was published.

Grove as editor, like Smith, did not actually make maps himself. Rather, Trelawney Saunders (1821–1910) undertook to make those for the *Bible* section, superintended by Grove. Their partnership was ideal for the purpose. Saunders had a longstanding interest in the geography of the *Bible*, and for about a decade (to 1868) was employed by Stanford to head the geographical department of his firm;¹³ all the biblical maps for the *Atlas* were engraved there. Grove, following his vital contribution to *A Dictionary of the Bible*, took the lead in the establishment of the Palestine Exploration Fund in 1865, and remained fully informed about its surveys and excavations.

Even though the classical section of the *Atlas* (34 or so maps) far outweighed the biblical (9 or so),¹⁴

there is no mistaking Murray's effort to highlight the latter in an effort to attract purchasers. Interest in the work of the Palestine Exploration Fund was currently strong. *A Dictionary of the Bible* had been published more recently than *A Dictionary of Greek and Roman Geography*, not to mention the other two classical dictionaries. No doubt for this reason the opening sentence of the announcement that accompanied each of the five Parts in which the *Atlas* was eventually issued (1872–74) refers to them in the order that it does:

THE present Work, which has been more than fourteen years in preparation, has been undertaken to supply an acknowledged want, as well as in illustration of the DICTIONARY OF THE BIBLE and the CLASSICAL DICTIONARIES.

Moreover, while it may be mere coincidence that the total price of the five Parts—five guineas [= 105/-]—matches that of *A Dictionary of the Bible*, the consistent placement first in Parts I to IV of one or two maps in the biblical section can only be deliberate.¹⁵

Part I received high praise when it appeared in 1872, as Murray's paper covers for Parts II to V do not fail to boast. The *Guardian*, for instance, was quoted:

The indices are full, the engraving is exquisite, and the delineation of the natural features very minute and beautiful. It may be safely pronounced—and higher praise can scarcely be bestowed—to be a worthy companion of the series of familiar volumes which it is intended to illustrate.

In each Part a map's index (if it has one, as all the topographical maps do) follows it immediately. In Part V the maps and indices are preceded by: a title-page for the complete volume; Smith's Preface (two pages); Contents page; and 26 pages of 'Sources and Authorities for the Maps' (map-by-map). These texts are largely unsigned, although Müller—for this task, too, 'the right man'—no doubt wrote most of them; altogether, of the 68 map pages in the *Atlas*, 47 are his work. The respected expert and Murray author, Colonel Sir Henry Yule (1820–89), contributed the map of India (31) and its accompanying text—extra-long because there were so many new findings to be noted.

Once Parts I to V were all published, a single bound volume containing the front matter and all the maps (in their correct numerical order, with indices interleaved) was issued for a price of six guineas [= 126/-].¹⁶ Murray's final account confirms how costly the entire undertaking had been, and it never attracted sufficient purchasers to recoup the outlay.¹⁷ There was evidently a very modest reprinting in 1875, and an American edition of the volume with a Little, Brown & Co., Boston, title-page; but it would seem that at most about 1,500 copies of any Part were produced. In June 1875, when Grove insisted upon awaiting the one-fourth share in the profits from sales that he had been offered originally rather than accept the cheque for 50 guineas which Murray sent unasked, the latter's response was (with characteristic double exclamation marks):

I have therefore the painful duty of informing you that taking into account the proceeds of the sale of 1000 copies of the *Atlas*, there remains a deficiency of about £4,000!! The completion of the accounts in a few days hence will enable me to state the sum precisely. Time alone will show whether so large a loss can be wiped off by future sales. The Biblical section of the work unfortunately in which you alone are concerned has been by far the most costly. I fear you did not anticipate such a result as this, but we must have hope and patience we publishers!

Grove's reaction was both prompt and dignified:

'Blessed is he that hopeth for nothing for he shall not be disappointed'. I had hoped for nothing from the *Atlas*, but the pleasure of working with you and Smith on a subject that I dearly loved—I am quite content to go on in the same frame of mind.

Only by about the mid-1890s was the stock sold out, and even then Hallam Murray (younger son of John Murray III) can state in 1897: 'the... *Atlas* cost us between £7/8,000 to produce, and has left us with a debt of over £3,000.' For all the pain inflicted by this shortfall, the truth was that a publisher as successful

as Murray could absorb it, as his son subsequently acknowledged with pride in recalling the extensive collaboration with Smith:

Together they [Murray and Smith] planned and carried out the Dictionary of the Bible, the Dictionaries of Greek and Roman Antiquities and Biography, and those of Christian Antiquities and Biography, the Latin-English and English-Latin Dictionaries and the Classical Atlas, as well as many minor works which still hold their own as monuments of English scholarship. These enterprises, together with the Dictionary of Hymnology and the Speaker's Commentary, involved an outlay of close on 150,000 *l*. In all cases he had long to wait before his outlay was recouped, and in one or two instances it is probable that it never will be repaid; but, with him, good and creditable work was an incentive as strong as the prospect of financial profit.¹⁸

The relative failure of the *Atlas* can be variously explained. In the first instance, its size, weight and price were all formidable. Here was a *de luxe* monument for gentleman scholars and major libraries,¹⁹ not a handy reference tool that it was practical for a larger public to acquire and consult. A price of even 105/- unbound was steep, almost twice the 56/- to which Murray had reduced the two-volume *A Dictionary of Greek and Roman Geography* by the early 1870s (originally listed at 80/-). At 126/-, the bound single-volume *Atlas* cost more than the three of *A Dictionary of the Bible* [105/-]. Nor was it ever possible for the canny selective purchaser to cherry-pick, say, just the classical maps or just the biblical ones, because (as observed above) maps from both were purposely included in each Part. As a result, purchasers with an interest mainly in the *Bible* were most likely to be deterred. To this extent, the compromise which had combined two possible atlases, each with its own distinct focus, may have come to seem self-defeating: it saved Murray production costs but damaged sales.

After its lengthy period of preparation, the timing of the *Atlas*'s publication was also to turn out unfortunate. By the 1870s, in both the classical and biblical fields, not to mention geography, the pace of scholarship was accelerating with the rise of the research university, and a stream of fresh discoveries was emerging from archaeology and survey. It was commendable that the 'Sources and Authorities for the Maps' should do their utmost to appear up-to-date, but these very efforts underline the problem. The text for Map 18 even reproduces a plan of excavations in Rome's Forum dated the same month as the *Atlas*'s Preface (November 1874); attention is drawn to the point that the plan of Constantinople in Map 43 (also issued in Part V, 1874)

takes account of an 1873 publication; and in numerous instances readers are informed that what they see on a map is no longer accurate or complete in the light of findings published since its production. Africa was rapidly ceasing to be the ‘empty continent’ that it appears to be in Map 2; the interior of Asia Minor was being penetrated; and so on. To be sure, few printed works of reference (and especially none that is 18 years in the making) can expect to be fully current on publication, but still the *Atlas* was soon to be overtaken to a degree that was hardly foreseeable in the 1850s. The impact was strongest on the biblical side, ironically as the result of Grove’s own initiative in launching the Palestine Exploration Fund. The detailed survey of Western Palestine commissioned by the Fund and headed by Lieutenant Conder (1848–1910) of the Royal Engineers was carried out between 1872 and 1875, and published in London between 1880 and 1884.²⁰

Maps from the *Atlas* saw some re-use in other books by Murray authors,²¹ but there is no sign of any scheme on the part of Smith or John Murray III to re-use them more fully; in particular, Smith never fulfilled his ambition to issue a small classical atlas, let alone a biblical one. Such ideas only resurfaced after John Murray III had died in 1892, and management of the firm was taken over by his sons, John Murray IV (1851–1928) and Hallam Murray (1854–1934), in partnership. Possibly they were prompted by George Adam Smith (1856–1942), Professor of Hebrew and Old Testament Exegesis at the Free Church College, Glasgow, who explains in the Preface (dated April 1894) to his book *The Historical Geography of the Holy Land*:²²

During my work on this volume, I have keenly felt the want, in English, of a good historical atlas of the Holy Land. I have designed one such, containing from thirty to forty maps, and covering the history of Syria from the earliest epochs to the Crusades and the present century; and preparations are being made by Mr. Bartholomew and myself for its publication by Messrs. Hodder and Stoughton.

This Smith (no relation to William), Principal of the University of Aberdeen from 1909, and John G. Bartholomew (1860–1920), as head of the family firm of Edinburgh mapmakers and publishers, were both busy men. In the event, the atlas to which G. A. Smith refers in 1894 did not achieve publication until 1915, under the title *Atlas of the Historical Geography of the Holy Land*. He reaffirms in its Preface that it was originally planned in 1894, and the Bartholomew Archive in the NLS Map Collections preserves undated notes handwritten by Bartholomew listing 43 maps in a provisional Table of Contents (the atlas as

published has 60).²³ For present purposes, it is striking that against three titles ('Palestine before the entry of Israel', as well as in the times of Deborah and David) he has added a reference to Smith/Grove 34 (1) and (2) ('The Holy Land at Successive Periods', eight maps). More generally, any reader of G. A. Smith's 20 dense prefatory pages in the atlas headed 'Notes to Maps, with Explanatory Bibliography' may readily imagine the 'Sources and Authorities for the Maps' in the Smith/Grove *Atlas* as a possible model for this section.

If, as seems likely, G. A. Smith and Bartholomew addressed enquiries about the Smith/Grove *Atlas* to the Murray brothers, they may have revived the sombre memory of this forgotten lossmaker—or possibly they may by chance have deepened an interest which the brothers had already developed for themselves. Conceivably, soon after taking over the firm in 1892, they identified the *Atlas* as a major work whose materials might be put to profitable re-use in some economical form. Awareness that in 1893 the major German map publisher, Justus Perthes of Gotha, was beginning to issue a substantial *Atlas Antiquus: Atlas zur Geschichte des Altertums* by Wilhelm Sieglin (1855–1935) may have stimulated thoughts of British competition. Without doubt, the initiative by Perthes did prompt the leading scholar Heinrich Kiepert (1818–99),²⁴ at the University of Berlin, to begin producing at last the definitive classical atlas he had long planned. The first fascicle of this ambitious work, *Formae Orbis Antiqui*, was published by Dietrich Reimer, Berlin, in 1894, with a 'critical text' for each map in both German and English. For a wider readership, Kiepert's small *Atlas Antiquus* was already the envy of any publisher; between 1859 and 1902 it appeared in 12 editions and several languages (including English), and the cover of the final edition flaunted its bestseller status with the words 'Drittes Hundert Tausend' (300,000th) set prominently at the top.²⁵

A printed draft title-page recently found in the Bartholomew Archive (Proof Map Drawer 68) confirms that the Murrays must have settled upon a collaboration with Bartholomew in 1894. Dated that year, the page is headed 'Student's Edition' *Atlas of Classical Geography: A Series of Thirty-Two Maps* by Sir William Smith (who had died the previous year) and Sir George Grove; the page-size matches that of their original *Atlas*. With this valuable find there is now a solution to the puzzle of when and why at least 17 of the 22 plates engraved for the original *Atlas* should have come to Bartholomew in Edinburgh. Here by chance—with the assistance of Librarian Kenneth Winch—I found them stored in the firm's vault in March 1995, shortly before it left its imposing Duncan Street premises; neither it nor the Murray firm was aware that this Murray property was still there over a century later.²⁶ It can hardly be a coincidence that the 17 plates of classical maps offer material for precisely 32 printed pages (rather than 32 distinct maps), as follows. The number(s) listed

are those for the map(s) on each plate (still the same numbers as for the original *Atlas*; the brief descriptions are mine; engravers, J = Jacobs, S = Stanford, W = Weller):

Altogether, six of these 17 plates were engraved by Jacobs and colleagues in Paris (one of the six is only a half-plate), nine by Weller in London (one is only a half-plate), and two by Stanfords in London. It is especially fortunate that ‘Peloponnesus’ survives, the map that is best documented in surviving correspondence. This weighty specimen of engravers’ skill fully confirms Jacobs’ reminders to Murray that such fine work was exceptionally laborious and time-consuming—the delicate hachuring for elevations, and the lettering (much of it tiny) all rendered upside-down and back-to-front for the printing press.

When and why five plates for biblical maps (35, 36, 39, 40, 41, all two-page spreads) from the *Atlas* should also have come to Bartholomew is less clear. The likeliest date to infer would be 1894 again, and the reason the plans being made by G. A. Smith and Bartholomew for a biblical atlas, even though Map 34 (noted on Bartholomew’s provisional Table of Contents) is not among the five. In any case, neither the plates of biblical maps nor those of classical ones did see use for the purpose, and the planned classical atlas was abandoned—although not immediately, because the printed draft title-page bears a cryptic note added in pencil ‘Revised to 1896’. Whatever other hesitations may have discouraged the Murrays—the original page-size, for example, was surely too large and unwieldy for students—the one vital component which their economical plan omitted to allow for sufficiently was colour, a costly addition because it would still need to be made by hand. Without it, however, the maps would lack appeal, and some of their features would hardly be meaningful. On ‘Greek and Phoenician Colonies’ (Map 9), for instance, it is the colour of the underline below a colony’s name that alone identifies the founder; understanding of ‘Italy Before the Immigration of the Galli’ (Map 15, top left) is even more dependent upon colouring.

In 1897 the Murrays, undaunted evidently, resolved on commissioning a revised edition of the *Atlas*, and they invited G. Beardoe Grundy (1861–1948; not in *ODNB*) to undertake this task.²⁷ Realizing that it was beyond the capacity of a single scholar, he set about seeking expert help, as he well could because in the same year he took up an appointment as lecturer in ancient history at Oxford. The colleagues that he approached were unresponsive, however. Meantime he deterred both the Murrays and Bartholomew (who was to print the revised work) by his obstinate insistence that the hachuring for physical elevation had to be enhanced by altitude tinting—an improvement that would be regarded as routine today, but was still innovatory and liable to

prove expensive at the end of the nineteenth century. Once again, cost must have been the overriding influence behind the cautious compromise that the Murrays and Grundy somehow or other agreed upon. The goal of revising the *Atlas* was abandoned. Instead, booklets were to be issued, each normally containing just a single folded map sheet and an index to it. Overall, the match between their contents and those inferred above for the *Student's Atlas* is close. In most instances a map's basis is the corresponding sheet from the original *Atlas*, with altitude tinting and varying degrees of simplification and revision incorporated. Many of the credit lines in the maps' margins begin: 'Drawn by Dr. Charles Müller...', but no reference is made to the original *Atlas*. The number of booklets in this series, *Murray's Handy Classical Maps*, grew to 11, all appearing between 1899 and 1905. They were rightly considered attractive and useful, and they sold well, with successive reprints being ordered until 1967. Meantime, in an independent venture ten years earlier, William Calder and George Bean had revised and reformatted 'Asia Minor' for publication as a supplement to the journal *Anatolian Studies*, Volume 7.²⁸ The booklets were in turn the basis for a textbook volume edited by Grundy, *Murray's Small Classical Atlas*, which first appeared in 1904 and was also last reprinted in 1967. Here, for the most part the Handy maps are further simplified and reduced in size and scale; no attribution to Müller (or any other map compiler) is made.²⁹

In these forms at least, the maps that Müller had made for the original *Atlas* continued in use for another 70 years or so. But the *Atlas* itself sank into oblivion,³⁰ eclipsed first by the rival projects of Sieglin and Kiepert before the First World War, and then from the late 1920s by the fitful struggles of an international commission to map the Roman Empire in its entirety at a uniform scale (the *Tabula Imperii Romani*).³¹ Sadly, however, none of these rivals or successors ever completed what they had set out to publish, let alone provided any indexes in the two German instances. So for well over a century, until the long-delayed revival of serious comprehensive mapping efforts in this field during the 1980s and the publication of the *Barrington Atlas of the Greek and Roman World* by Princeton University Press in 2000, the forgotten *Atlas* of Smith and Grove remained unsurpassed as a complete, major classical atlas. The extraordinary vision, achievement and investment that it embodies—the work of a handful of heroic scholars and engravers, funded privately by a single Midas—are long overdue for recognition. The present re-issue by I.B. Tauris is an inspiration and a magnificent tribute to all those who made this great *Atlas* possible.

Notes

- 1 See Christopher Stray, 'Sir William Smith and his dictionaries: A study in scarlet and black,' 35–54 in C. Stray (ed.), *Classical Books: Scholarship and Publishing in Britain Since 1800* (London, 2007).
- 2 For further information on most residents of Great Britain mentioned in this Introduction, see the relevant entry in *Oxford Dictionary of National Biography* (2004); Bartholomew and Murray have 'Family' entries.
- 3 For the correspondence relating to the *Atlas*, see R. J. A. Talbert, 'Carl Müller, S. Jacobs, and the making of classical maps in Paris for John Murray,' *Imago Mundi* 46 (1994): 128–50. These materials are now held by the John Murray Archive, National Library of Scotland (<http://www.nls.uk/jma/>); I greatly appreciate the assistance of the curator, David McClay.
- 4 The best overview of his life and work is the Wikipedia entry, Karl Müller (*Altphilologe*).
- 5 *GGM* (text and maps) was re-issued by Georg Olms, Hildesheim, in 1990.
- 6 For Müller and his contribution to the *Atlas*, see further R. J. A. Talbert, 'Mapping the classical world: Major atlases and map series 1872–1990,' *Journal of Roman Archaeology* 5 (1992): 5–38, esp. 6–11, 31–33. Jacobs' first name eludes me.
- 7 This plate, now lost, was the most expensive commission that Jacobs undertook for the *Atlas*; he estimated for it one-and-a-quarter times the work that 'Peloponnesus' had required, and requested a year for its completion.
- 8 Publisher and cartographer as well as engraver (not in *ODNB*); he contributed Map 10 'Britannia' in the *Atlas*.
- 9 Stanford was rapidly expanding his business in the early 1860s: see P. Whitfield, *The Mapmakers: A History of Stanfords* (London, 2003), 13–19, 26–27.
- 10 For the various processes see, for example, D. Woodward (ed.), *Five Centuries of Map Printing* (Chicago and London, 1975), especially the chapter by Coolie Verner, 'Copperplate printing,' 51–75.
- 11 See Charles L. Graves, *The Life and Letters of Sir George Grove* (London, 1903), 44, 47–50, 66–70, 102–104.
- 12 Murray to Grove in Graves (previous note), 108; Grove to Murray on 5 April 1864 in NLS Murray Archive.
- 13 Not in *ODNB*; see his obituary in *Geographical Journal* 36.3 (1910): 363–65, with Whitfield (above, n. 9), 13–15, 27–29.
- 14 The division is not rigid: Maps 40 and 43 in particular cater to both classical and biblical interests.
- 15 The Parts comprise, in order, Maps: I (1872) 35, 34, 9, 12, 16, 17, 20–21; II (1873) 37, 41, 26, 27, 22–23, 3–4; III (1873) 36, 40, 24, 25, 11, 2, 28; IV (1874) 39, 29, 32, 1, 5–6, 7–8, 33; V (1874) 10, 13–14, 15, 30–31, 38, 42, 43, 18–19.
- 16 The paper covers of all five Parts carry the title *An Historical Atlas of Geography Biblical and Classical*, but for the complete work this was modified to *An Atlas of Ancient Geography Biblical and Classical*.

- 17 See NLS Murray Archive Ledgers E, p. 406 (Ms. 42730) and G, pp. 109–10 (Ms. 42732). No paper was saved in producing the volume because there too, as in each Part, the maps comprise a series of separate sheets normally folded once to form a doublespread; their reverse sides remain blank.
- 18 J. Murray IV, *John Murray III, 1808–1892: A Brief Memoir* (London, 1919), 23. *The Speaker's Commentary* (ed. Frederic C. Cook) was being issued from 1871 onwards, at the same time as the *Atlas*, and Smith's *Christian Antiquities Dictionary* from 1875, immediately after completion of the *Atlas*.
- 19 Note the very warm appreciation expressed by Edward H. Bunbury, *History of Ancient Geography* (published by Murray in two volumes, 1879), xi.
- 20 Claude R. Conder and Horatio H. Kitchener, *The Survey of Western Palestine: Memoirs of the Topography, Orography, Hydrography, and Archaeology*, 7 vols, 26 maps (one inch to a mile).
- 21 Before the *Atlas* itself was published, its Maps-to-be 9, 24, 25, 26 appeared uncoloured (with different numbers) as foldout endpapers in the third (1862) and fourth (1872) editions of George Grote, *A History of Greece*; later, Map 21 was reprinted for Volume 2 of the 1907 edition. In 1873 Henry F. Tozer's *Lectures on the Geography of Greece* includes as a foldout following the Contents an uncoloured map of Greece which is the basis of Maps 22 and 23 in the *Atlas* (but with no box bottom left).
- 22 London: Hodder & Stoughton, xvii. On this book and its success (over 35,000 copies sold in Smith's lifetime), see Robin Butlin, 'George Adam Smith and the historical geography of the Holy Land: Contents, contexts and connections,' *Journal of Historical Geography* 14 (1988): 381–404.
- 23 <http://www.nls.uk/bartholomew/>. The notes were discovered by Kimberley Morgan. My thanks to the curator, Karla Baker, for drawing this item and others to my attention during my visit to the Archive; her assistance, and that of Christopher Fleet, Senior Map Curator, have been invaluable.
- 24 For his career and work, see Lothar Zögner (ed.), *Antike Welten, Neue Regionen: Heinrich Kiepert 1818–1899* (Berlin, 1999).
- 25 On these atlases, see further Talbert (above, n. 6), 11–15 and 33–35. Kiepert's FOA has been re-issued—without, however, the few English versions of the 'critical texts'—by Edizioni Quasar, Rome (1996).
- 26 The miraculous survival of these plates is due not least to their remaining in Edinburgh; what eventually became of the others in London is not known. The timing of the rediscovery, too, proved fortuitous. By early 1995, in connection with the move from Duncan Street, many Bartholomew assets were being disposed of; a scrap valuation for all the copper-plates in the vault had been obtained.
- 27 For his own account, engaging though not always accurate in detail, see *Fifty-Five Years at Oxford: An Unconventional Autobiography* (London, 1945), 147–50.
- 28 At the time of his death in 1977 Bean was preparing a revised edition: see R. B. Todd (ed.), *The Dictionary of British Classicists*, vol. 1 (Bristol, 2004), 58–59.
- 29 For the *Handy Maps and Small Atlas*, see further Talbert (above, n. 6), 9–11 and 32–33. NLS Map Collections preserves 12 of Bartholomew's plates for the former (including 'Asia Minor'), and 7 for the latter, as well as extensive *Handy Map* proof material (Bartholomew

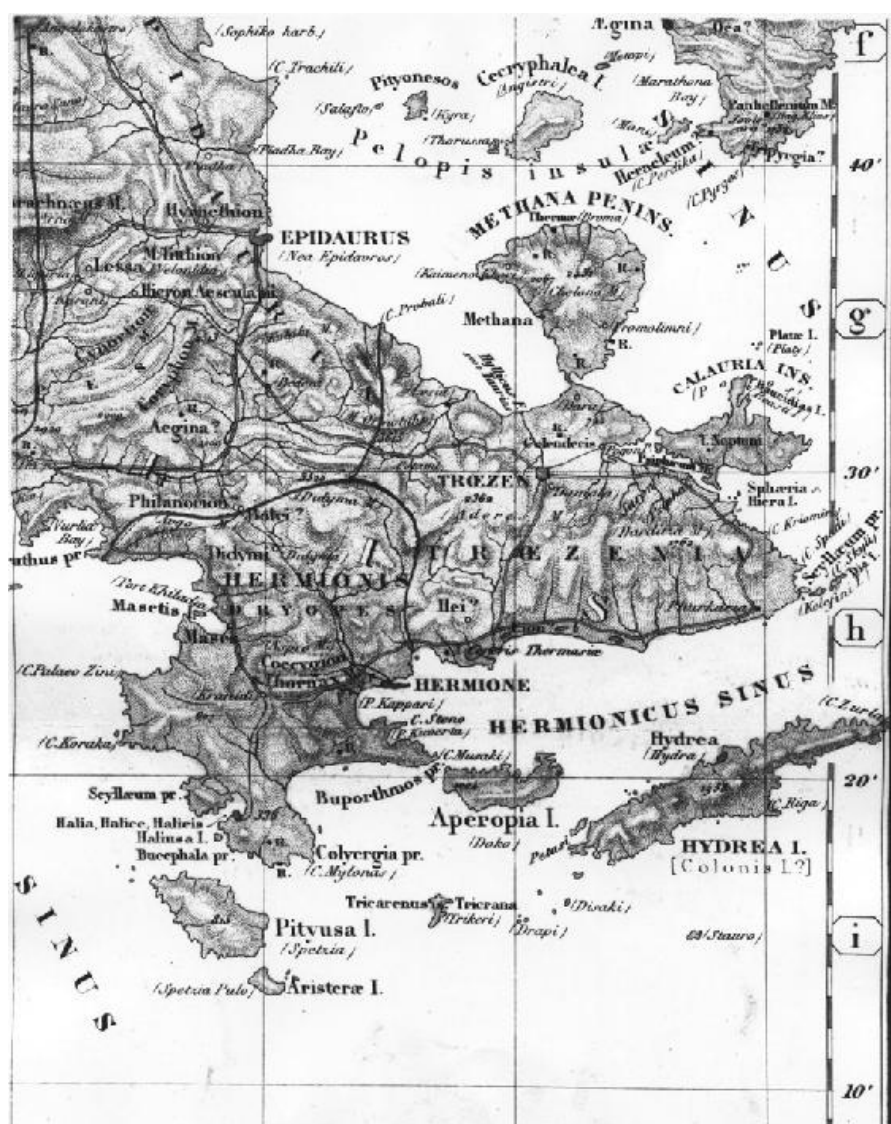
- 30 J. Oliver Thomson, *History of Ancient Geography* (Cambridge, 1948), 394, in drawing attention to the need for 'a good atlas' recommends the *Handy Maps* among others, but shows no awareness of the *Atlas* from which they were derived. The energetic Kai Brodersen was aware of it, but had not seen it because he could not locate a copy in Germany: see his *Terra Cognita: Studien zur römischen Raumerfassung* (Hildesheim, 1995), 330.
- 31 For this, and comparable initiatives, see R. J. A. Talbert, 'Maps, 20th-Century Projects,' in Dee Clayman (ed.), *Oxford Bibliographies Online: Classics* (New York, 2012).

Vous me demandez, Monsieur, s'il y a en France
quelque bon manuel de géographie ancienne, que
vous pourriez mettre à profit pour une publica-
tion analogue. Je puis vous assurer que dans ce
genre la France n'a absolument rien qui mérite d'être
mentionné. Dans les collèges français l'étude de la
géographie ancienne est fort négligée et les petits
livres élémentaires qu'on met entre les mains des enfants,
n'offrent rien qui pourrait être de quelque utilité à
une publication qui doit porter le nom de M.
Murray et Smith, et occuper, dans son genre, la
même place éminente que votre Dictionnaire occupe
parmi les grands ouvrages capitaneux.

Veuillez agréer l'expression de profond respect
et de haute considération, avec lesquels j'ai
l'honneur,

Monsieur,
Veuillez votre tout-dévoué serviteur
Charles Müller









ACIÉRAGE

DES PLANCHES GRAVÉES EN CUIVRE, ACIER, &c.

DES CARACTÈRES ET CLICHÉS TYPOGRAPHIQUES EN MÉTAL D'IMPRIMERIE

Clichage des Bois gravés, etc., en métal aciéris remplaçant la galvanoplastie

M JACQUIN

71, Rue Notre-Dame-des-Champs, 71

PRIX.

ACIÉRAGE DES PLANCHES GRAVÉES.

Planches artistiques, le décimètre carré.....	05 c.
Planches de commerce, avec vignettes, le centim. carré..	60 c.
Planches ordinaires de commerce, sans vignettes.....	01 c. 1/2

PRIX.

CARACTÈRES ET CLICHÉS.

Cliché en métal aciéris, tout monté, le centim. carré...	0.50 c. 1/2.
N. B. On ne fait pas de clichés au-dessous de 0,50 c.	
Acierage des caractères seuls, le kil.....	25
D ^r des clichés stéréographiques, le décimètre carré.	0 30

L'aciérage, que nous appliquons avec succès depuis plusieurs années déjà aux planches gravées en cuivre, a rendu d'incontestables services aux graveurs, aux éditeurs d'estampes, aux imprimeurs en taille-douce. Aussi aujourd'hui est-il universellement appliqué, aussi bien sur la modeste planche d'écriture, que sur la planche la plus délicate et la plus précieuse de nos premiers artistes. Ce succès s'explique par les longs tirages qu'on a pu obtenir sur les planches aciérées, par la similitude la plus parfaite dans les épreuves de la 1^{re} à la 100,000^e, par la rapidité de l'opération et par la modicité de son prix.

Les belles planches de MM. Haeriquel-Dupont, Calamatta, Macinet, etc., ont reçu l'application de l'aciérage. Il en est de même des planches de la chalcographie et de celles de la carte de France, gravée et imprimée par les soins du Ministère de la guerre.

Nous avons depuis peu appliqué avec un égal succès l'aciérage aux planches gravées sur acier.

Il nous a semblé aussi que ce mode de conservation pourrait être utilement employé pour les clichés en relief et les caractères mobiles en métal d'imprimerie, et que l'aciérage pourrait rendre à l'imprimerie typographique le même service que ce procédé a déjà rendu à l'impression en taille-douce.

De l'avis de gens compétents, l'usure des clichés et des caractères d'imprimerie provenant bien plus du frottement par les rouleaux et les brosses d'essuyage que de l'écrasage du cylindre des presses, l'effet d'une couche de métal résistant, appliquée sur le métal des clichés et des caractères, pouvait obvier à cet inconvénient. Toutefois, une objection se présentait à cause de l'oxydabilité de l'acier. Les précautions que les imprimeurs en taille-douce sont habitués à prendre pour la conservation de leurs planches ne pouvaient être demandées dans les imprimeries typographiques.

Ces difficultés ont été heureusement vaincues par notre Maison, qui est chargée d'exploiter les procédés d'aciérage dus à l'invention de MM. Salmon et Garnier. Après plusieurs essais faits avec le concours bienveillant de plusieurs de nos premiers imprimeurs, nous sommes arrivés à déposer sur les clichés et les caractères une couche entièrement inoxydable, et des caractères mobiles aciérés, moulés à plusieurs reprises et entretenus dans un état continu d'humidité, n'ont point eu la moindre trace de rouille. De plus, il a été établi que la couche d'acier déposée ne nuisait en rien à la qualité du métal d'imprimerie et permettait de reproduire de nouveaux caractères ou clichés.

Des clichés aciérés ont subi dans plusieurs publications et journaux des tirages importants, notamment dans le *Journal pour tous*, l'*Opinion nationale*, etc., etc., et ont démontré l'avantage que MM. les imprimeurs peuvent retirer de l'emploi de ce système, qui produit de meilleures impressions et augmente considérablement la durée des types.

Il a été encore constaté que les clichés aciérés non-seulement sont plus résistants que les clichés ordinaires, mais qu'ils lâchent mieux l'encre, sont plus faciles à nettoyer à la brosse, et donnent moins de peine à l'ouvrier.

Ils conservent pendant un long temps toute la pureté à l'œil de la lettre et aux traits de la gravure clichée en métal d'imprimerie.

Il permet aux imprimeurs d'économiser plusieurs fontes par an et de remplacer utilement la galvanoplastie des gravures sur bois.

Les caractères et les clichés aciérés sont moins susceptibles de s'user au frottement.

Notre Maison se charge du clichage, et livre le cliché en métal aciéris donnant les mêmes résultats que le cliché en galvanoplastie, avec une économie de près de 50 0/0 sur le prix.

Pour plus de renseignements, s'adresser à notre Maison, 71, rue Notre-Dame-des-Champs.

3
Carl Müller (1813–1894), S. Jacobs, and
the Making of Classical Maps in Paris
for John Murray (*Imago Mundi* 46: 1994.
pp. 128–50)

For more than a century now, only one attempt to produce a major classical atlas has been successful: that volume, entitled *An Atlas of Ancient Geography Biblical and Classical to Illustrate the Dictionary of the Bible and the Classical Dictionaries*, was edited by William Smith and George Grove.¹ This great work of 68 map pages was issued by John Murray² of London between 1872 and 1874 at a high price of five guineas (six for a bound copy). It failed to attain wide circulation, and has long been a forgotten rarity.³ Little more could be said about its planning, development and production over a twenty-year period until investigation of the publisher's correspondence preserved at 50 Albemarle St., London (where the firm of Murray has always been situated) proved otherwise. While these files are far from complete they can still provide unusually instructive details.

Among the relevant letters are a total of five from Carl Müller, the talented yet self-effacing scholar who was responsible for the majority of the classical maps. In all, 47 map pages were compiled by him. More broadly, the fifteen surviving letters written from Paris between 1860 and 1866 by the engraver S. Jacobs (who produced ten maps in all for Murray) make an invaluable addition to our knowledge of the production and printing of engraved maps at a time when more cost-effective methods were becoming predominant. This paper aims to exploit this rich material in order to illuminate the circumstances of atlas production and the creation of Smith's atlas in particular.

Preliminary schemes

The atlas was originally planned as a collection of classical maps to complement the successful series of reference-works which Smith edited for Murray, above all the *Encyclopaedia of Classical Antiquity* in six volumes. Fittingly enough, the intention to produce a classical atlas is mentioned at the end of the Preface to *A Dictionary of Greek and Roman Geography*, dated December 1853: it would be, Smith stated, "on a sufficiently large scale to be of service to the more advanced student". His Preface to the completed atlas, dated November 1874, says that the work had been 18 years in the making. The biblical part was added in the mid-1860s by George Grove.

The claim in the 1874 Preface now finds some confirmation in Murray's surviving correspondence. On 24 March 1852 the Edinburgh publisher, A. Keith Johnston,⁴ wrote to John Murray:

When I had last the pleasure of meeting with you we had some talk about your proposed Atlas to accompany Dr. Smith's Classical Dictionary, and it was then

stated that it formed part of my plan to accompany the School Phys. and General Atlases with a School Atlas of Classical Geography of the same size in the same style.

From repeated enquiries and an apparent unwillingness on the part of some teachers to introduce my General Atlases until satisfied that the other will soon follow, I think it becomes necessary to proceed with it immediately. Your proposed Atlas would, I suppose from some remarks of Dr. William Smith, be much more extensive and embrace a much wider range than mine. If this be the case, and provided you still desire that I should be engaged in its production, it appears to me that both vols [*sic*] might be carried on at the same time, with advantage and economy to each, since the same materials & similar mechanical arrangements would serve for their production.

It will be obliging if you let me know whether you are disposed to entertain this proposal, and if so whether it would be convenient to proceed soon.

Murray responded promptly on 28 March 1852:

I hasten to acknowledge your note on the subject of a classical Atlas. I am most anxious to engage in such a work in concert with you, and as a necessary preliminary will proceed to state the position in which Dr Smith and I stand regarding it. Dr. S. projected some time since a new Classical Atlas on a large scale and a smaller one for schools as a part of the series of larger and smaller classical dictionaries published or in progress. He allowed or caused Taylor and Walton to print an announcement at the end of some of his publications. I have not yet had an opportunity to ascertain Messrs. T. and W.'s views regarding any share in the work being assigned to them. I will take an early opportunity to do so. Meanwhile Dr. Smith and I are anxious that the execution of the work should be in your hands and that you should retain a share in it—if you desire it. Pray let me hear what are your views on this head, and at what you estimate the cost of say 40 folio maps for the large series—and 25 of the school Atlas. Same size as your own 4to atlases—also what advance, towards expenses would be looked for in the progress of the work. Dr. Smith would wish to retain an interest in it as a partner.

Murray must have immediately contacted Smith about Johnston's approach, to judge by Smith's note to him of 29 March:

The Maps

I think I had better see Walton upon this subject myself, and explain to him how I stand in relation to Johnston, referring him to you for details about the pecuniary matters. He might complain that I was treating him shabbily in not

communicating with him, but leaving it entirely to you as a matter of business. I think I might put it in such a way to him as to induce him to give up the project. If you see no objection to this, please to send me a line at once, since I will not mention the subject to him without first hearing from you.

On 3 April Smith writes again to Murray:

I have received the accompanying letter from A. K. Johnston. I shall be out of town on Monday, but will call upon you on Tuesday at one o'clock. Before proceeding further, we ought to ascertain, whether Johnston means to publish his School Classical Atlas with us or without us.

Carl Müller and his role as mapmaker

Johnston's letter to Smith is not preserved, and the entire issue of the creation of a classical atlas now drops out of sight for the next four years.⁵ When the idea surfaced again in a letter from Smith to Murray dated 24 March 1856, the possibility of engaging A. K. Johnston was revived too.

I send you herewith a letter which I have had from Müller of Paris, and Cooke has promised to send you the Map, which I have left with him today for that purpose.

I thought that having a little time to spare now, you might be able to give the letter and the Map your best and most careful considerations. I shall be glad if you will return me the letter, and if you will take care of the list of words on the separate piece of paper.

I have read Müller's letter attentively and have looked carefully at the Map. I am very much pleased with both, and am convinced that we have got hold of the right man. I feel sure that with careful editing on my part, we shall produce an Ancient Atlas not only far superior to any yet existing (for that is not saying much), but one which will meet the requirements of the best scholars, and which will be a credit to all parties concerned in it.

As you are in Edinburgh, you can, if you think proper, show the Map to Keith Johnston, and ask him for an estimate of the expense of engraving. But I should much prefer having it executed in Paris under the eyes of Müller, unless the cost of having it engraved at Paris greatly exceeds Johnston's charges. If the Paris engravers would take our map with another for 740 francs [about £30], I should think the charge would be reasonable.

Pentland is very anxious to put the Maps in Johnston's hands and I should

be very happy to give him a good turn, but the fact of his being away from both Müller and me is a great objection, as every order must be given by letter; and I have not yet seen any of Johnston's maps which I like as well as those of the engravers at Paris.

The Map of Asia Minor to illustrate Rawlinson's Herodotus ought, I think, to take in Babylon. Has Rawlinson acquainted you with his wishes upon that point? I shall write to Müller telling him that he carry on working upon the Asia Minor, but leaving details for the present.

The estimate supplied by "the Paris engravers" must have been satisfactory, because no more is heard of any attempt to offer the work to A. K. Johnston.⁶ But the single most important development which now emerges is the involvement of Carl Müller, an elusive figure, perhaps indeed by his own choice, whose immense and lasting contribution to classical scholarship has failed to receive its due. Little is known of his life, partly because he seems never to have held a university post.⁷ He was born in Hannover in 1813 and matriculated at Göttingen University on 30 April 1832, recording his father as 'Kaufmann' in nearby Clausthal. He is next found in Paris, where he resided from about 1840 to the late 1860s as one of the many Germans recruited by the publishing house of Firmin-Didot.⁸ In all likelihood he was not an employee, but an independent scholar working for fees. By the mid-1850s he had already been responsible for published editions of *Geographi Graeci Minores*, Strabo, and *Fragmenta Historicorum Graecorum* in Firmin-Didot's great Bibliothèque des Auteurs Grecs.

How Müller and John Murray first came into contact with one another remains obscure. But it would seem that Murray first engaged him to draw some of the maps for George Rawlinson's *History of Herodotus*.⁹ The most likely explanation is that Murray was prompted to approach Müller by the appearance in 1855 of a set of 29 elaborate pull-out maps which he had drawn to accompany the first volume of his *Geographi Graeci Minores* (1855). These maps were engraved in Paris, with the linework done by S. Jacobs and the lettering by Isidore Dalmont and three others.¹⁰

Smith did not specify which map Müller had sent him for perusal, but it is most likely to have been the 'Twenty Satrapies of Darius'. Müller enquired about this in the first of his surviving letters to Murray, written from Rue Monsieur le Prince 48¹¹ and dated 25 December 1856 (Appendix, Letter 1). Previously on 2 June, Murray had informed him that this map was already in Rawlinson's hands, and that it would shortly be returned with the latter's adjustments. These might in turn be incorporated in the general map for *Herodotus* which Müller had all but ready.

It must have been in recognition of his contribution to Rawlinson's

Herodotus that Müller had been presented with a copy of the work and was in a position to thank Murray for it by 2 August 1858 (Appendix, Letter 2). By this date, moreover, Müller is clearly engaged upon the preparation of the “Ancient Atlas... far superior to any yet existing”, for which Smith in March 1856 had considered him “the right man”.

His next letter to Murray, of 18 October 1858 (replying to one of 15 September), likewise deals first with the Twenty Satrapies map (Appendix, Letter 3). Rawlinson had requested changes, and 1260 copies of the revised version had been ordered—presumably with a further printing of the work in mind. Evidently Müller now arranged to transfer the image to stone and lithograph the map instead of printing from the copper plate. After colour was added by hand, the map sheets were ‘satined’.¹² In the month after receipt of Murray’s instructions it had been possible to supply 800 finished copies, and the remaining 460¹³ were promised within 15 days. Failure to meet the mid-October delivery date set by Murray was the colourist’s fault.

The last substantive paragraph of Müller’s letter refers to preparatory work for the atlas. Drawing the eight maps of Greece had proved time-consuming, but it was done, and Müller reported he was now busy with the lettering. Because the maps were interrelated, and work on one required reference to another, Müller proposed not to forward them individually, but in groups. Nearest to completion were two sheets (*feuilles*) of the Peloponnese.

By the date of his next surviving letter, written on 17 March 1859 and addressed to Smith (Appendix, Letter 4), Müller had sent the sheets for the Peloponnese (North and South), and had received warm praise from both Smith and Murray. But their praise had obviously been tempered by a concern which Müller took the greatest pains to allay in the main body of the letter.

First, however, he confirmed dispatch of the map of Greece in the Time of the Persian Wars which Murray wanted both for the atlas (as a half-sheet) and, more urgently, for the fourth and last volume of Rawlinson’s *Herodotus*. The map itself was to be engraved on copper with a frame on three sides; the fourth side and title were to be drawn on stone. Müller urged retention of his inset of the battle of Plataea—among other reasons to match that of Heroic Greece which was to accompany the corresponding half-sheet map of Early Greece.

He then moved to his principal purpose, namely allaying Murray’s fears that the cost of engraving the maps as drawn would be excessive. In any event Müller was not altogether happy with Murray’s proposals to reduce the cost by omission of the modern place-names to accompany the ancient ones, and by abandonment of insets, especially since the atlas was designed to outclass all others. Instead, Müller suggested a compromise. He would be prepared to delete two-thirds of the modern names marked, leaving only those essential for

cross-reference to Smith's *Dictionary of Greek and Roman Geography* or to the text section of the atlas. In that event, 200–300 modern names would remain on each sheet which, at a charge for engraving in small italic of 6½ francs per 100 names, would add only 13–20 francs or 10–15 shillings to the total production cost for the sheet.

On the South Peloponnese map he would delete the insets relating to Laconia and Messenia which merely filled up space that would revert to open sea. However, removal of the inset at top right of the map was a different matter. It took up part of the Argolid, and if it were to be removed, the region must be redrawn with no resulting benefit or saving. Similar difficulties would occur if the insets covering the area of central Greece on the North Peloponnese map were removed; to show the area would merely introduce duplication, since central Greece appeared on another map. Altogether Müller favoured removing only a few insets from the two maps, and instead making economies by other means. In particular he suggested that considerable savings would result if main features only (without landscape detail) were engraved for Laconia and Messenia on the North map and for Elis and Arcadia on the South map.

Müller went on to assure Smith that the two Peloponnese maps were unique in having so many insets. The other six maps he had drawn did not offer such opportunity, and he promised to exclude any insets that might be considered dispensable. He then offered a layout diagram for the map that he expected to submit next, Attica, Athens, and its Environs.

Müller concluded by advising Smith that he would be leaving shortly for a visit to Göttingen, partly because the resources and facilities for his geographical and historical researches were better there, and also because the maps to accompany his *Geographi Graeci Minores* were to be engraved at either Gotha or Weimar, where the work could be done less expensively.¹⁴

Figure 3.1 The concluding page of Müller's Letter 5. Murray had enquired if there was any good French manual of ancient geography, which he might exploit to develop a comparable publication in English. Müller responded emphatically that there was absolutely nothing worthy of consideration.

(Courtesy of John Murray Ltd.)

The final surviving letter from Müller was written only nine days later, on 26 March 1859, in acknowledgement of an unnamed map in manuscript received from Murray the previous day (Appendix, Letter 5; and [Figure 3.1](#)). Since Rawlinson was to check the proof, the map in question is most likely to have been Greece in the Time of the Persian Wars, which is the only one to accompany Volume 4 of his *Herodotus*. In Müller's terms, it is a half-sheet, or single page.

Müller confirmed that, on Murray's instructions, he had required full attention to be given to production of the map, and had negotiated a delivery deadline. So the line-engraver and the lettering engraver had each guaranteed to finish within three weeks, allowing a proof to be forwarded in six weeks. Transfer to stone, printing, and colouring would not take long. Provided that Rawlinson returned his proof promptly, Murray could have the number of copies he wanted within two months.

Engraving and printing commissioned from S. Jacobs

The production order for the map about which Müller was apparently writing on 26 March 1859 was finally issued on 19 October 1859 in a letter written on Murray's behalf by his assistant, Edward Dundas, and addressed directly to S. Jacobs at 1 Rue de Condé, Paris:

I send you 'Map of Greece at the time of the Persian Wars.' Please to transfer it to stone, and print off from the stone *as fast as possible* 1050 copies on thin paper like the previous map of the Persian Satrapies. These maps are *not* to be coloured with the sole exception of the Route of Xerxes, which is to be coloured as in specimen.¹⁵

These maps which are included for my edition of Herodotus are wanted immediately.

I am much pleased with the manner in which the map is engraved, and hope that the other maps will be executed with the same care.¹⁶

Although no further letters between Müller and Murray survive, it is clear from subsequent developments that the two must have had significant exchanges between the time of Müller's long letter to Smith of 17 March 1859 and the start (in summer 1860) of the surviving correspondence between Murray and Jacobs about production of maps for the atlas. From this material we can deduce that Müller trimmed his plans for the maps of Greece to a striking degree. We can see the result, even if we cannot follow the stages by which it was reached. Perhaps it was the considerable amount of overlap that persuaded him to merge his two sheets of the Peloponnese into one (with a plan of Sparta inset), as well as to show Athens and Central Greece on a single sheet rather than two (Figure 3.2). Thereby the expense of two entire sheets was saved.

Since Müller had evidently delivered his sheet of the Peloponnese (Figure 3.3) to Jacobs by the autumn of 1859,¹⁷ the progress made since March must have been rapid. Jacobs in turn was able to send proofs to Murray, along with his account, in a brief letter dated 1 August 1860, which was to cause consternation in London.¹⁸ By this date Jacobs’ work on a second (unspecified) map of Greece was also well advanced.¹⁹

Je vous envoie, après les dernières corrections de Mr. Müller, et selon ses instructions, quatre épreuves de la carte du Peloponnèse, 2 coloriées 2 non coloriées. J’ai apporté les plus grands soins à l’exécution de cette carte, et j’ai lieu d’espérer que vous serez satisfait.

Voici, Monsieur, ce que coûte ce travail dans son ensemble:

Cuivre	60 francs
Gravure de trait et de topographie	4000
Gravure de lettre	543
Total	4603 francs

Figure 3.2 Lower half (21.75 × 9.5 in.; 55 × 24 cm.) of Map 25 Central Greece/Athens. Compare the layout of this published version (where other insets, for Acropolis and Harbours, are placed top right of the sheet) with Müller’s proposal in his Letter 4. Of all the maps commissioned from Jacobs, Map 25 was the most expensive and took the longest time to engrave. In this copy, as in Figure 3.3, impressions created by the premature folding of the sheet are visible.

(Courtesy of the Wilson Library, University of North Carolina at Chapel Hill.)

Figure 3.3 Map 26 Peloponnesus (17 × 22 in.; 43 × 56 cm.), a double spread set landscape fashion, was the first major map engraved for the atlas by Jacobs. When he received Jacobs’ account, Murray was so shocked that he threatened to place no more work with him. For a detail, see Figure 3.4; for part of the map in colour, see Plate 13.1.

(Courtesy of the Wilson Library, University of North Carolina at Chapel Hill.)

Monsieur Müller m’a annoncé dans sa dernière lettre, de nouveaux dessins. Veuillez, Monsieur, me faire savoir dans votre prochaine réponse à quelle époque je les recevrai. Je compte vous envoyer bientôt la seconde partie de la Grèce.

Concerned by the lack of response (during August!), Jacobs enquired again exactly one month later, on 1 September 1860:

N’ayant reçu ni réponse ni accusé de réception, je crois utile de vous demander si mon rouleau vous est arrivé. Vous m’avez fait dire autrefois que vous désiriez voir marcher rapidement les travaux et sur ce désir, je me suis mis en

mesure, j'espère donc, Monsieur, en une prompte réponse qui me fera connaître quelles sont vos intentions à cet égard.

To this Murray did respond on 13 September 1860:

I beg to inform you that I have safely received the packet containing proofs coloured and uncoloured of the Map of the Peloponnese from Mr Mullers Drawing. While Dr. Smith and I concur in giving you the highest credit for the manner in which this Map is engraved I am obliged to tell you that the price you charge for it of 4603 francs [= approx. £177] has caused us the utmost astonishment!! It is so high that it becomes impossible for us to continue with you and in future I regret to say we shall be obliged to have our Maps engraved by others. We have ascertained that the same Map might be engraved in all its details in this country for half the sum which you charge. Moreover you have committed a mistake of inserting Metres instead of Feet which depreciates the Value of the Map in England and moreover gives it the appearance of being a Servile Copy from some French engraving instead of an original drawing. We are informed by C. Muller that he warned you not to insert the heights in Metres therefore the mistake arises with yourself. It is only just to require that some deduction from the price should be made in consequence of this. I would also require you to go over your charges generally and ascertain whether you have not made some mistake. I regret much to be obliged to write this in a tone of complaint.

Jacobs at once defended himself in a letter of 18 September 1860:

J'ai été extrêmement surpris d'apprendre que vous trouviez le prix de la carte du Peloponnèse aussi élevé; il est comparativement inférieur aux prix que je vous ai demandés jusqu'ici, et je vous serai obligé de vouloir bien examiner de nouveau le travail, il est considérable [Figure 3.4]. Je ne crois pas que pour exécuter avec le même soin, l'on puisse, dans quelque pays que ce soit, graver à des prix inférieurs. J'ai, croyez le bien Monsieur, le plus grand désir de continuer mes relations avec une maison aussi honorable que la votre et je ne voudrais nullement exagérer mes prix. Seulement, l'exécution de cette carte, qui est de beaucoup le plus importante de l'Atlas, a demandé un temps considérable (le travail (seul) des montagnes a exigé sept mois passés).²⁰

J'avais dans le principe fait connaître à M. Müller ce que coûterait cette carte, je regrette qu'il ne vous l'ait pas fait savoir; il m'est impossible malgré toute ma bonne volonté de rien diminuer, sur ce travail. D'ailleurs, pour éviter à l'avenir tout malentendu, si comme je l'espère, je continue à graver votre Atlas, je vous ferai connaître le prix de chaque carte avant de la commencer.

Figure 3.4 This detail (original size) from Map 26 Peloponnesus, showing the area from Epidaurus to Hermione, indicates the fine detail of the linework, lettering and hachuring: the engraving of the mountains took seven months.

(Courtesy of the Wilson Library, University of North Carolina at Chapel Hill.)

Quant à votre réclamation au sujet des hauteurs de montagnes qui ont été exprimées en mètres au lieu de l'être en pieds anglais, elle est parfaitement juste; aussi, bien qu'il n'y ait aucunement de ma faute, les rapports de M. Müller avec le graveur des lettres²¹ ayant été directs, je suis tout disposé malgré la dépense considérable qui en résultera pour moi, à effacer les mètres et à les rem-placer par des pieds anglais. J'ai écrit à M. Müller à ce sujet. Ce qui m'avait fait hésiter d'abord à faire ces corrections, c'était la crainte de fatiguer beaucoup la planche de cuivre; mais comme on m'a signalé un procédé nouveau qui s'emploie au Dépôt de la Guerre et qui obvie à l'inconvenient des repoussages, je m'empresse de l'employer bien qu'il soit fort dispendieux. Je compte vous envoyer de nouvelles épreuves dans un mois environ, vous recevrez en même temps des épreuves de la seconde carte de la Grèce elle est terminée, sauf les corrections de M. Müller.

Despite his previous outburst, Murray evidently now retreated a considerable way. At least, the metric figures on the Peloponnese map never were altered,²² and as early as 7 October 1860 we find Jacobs submitting his quotation for a further map that he has been offered. Whether his prices were in fact markedly higher than those of leading engravers elsewhere is doubtful to say the least.²³ At the end of Müller's Letter 4 of 1859, Didot only *hoped* that engraving costs at Gotha or Weimar would be lower than in Paris (he may have been disappointed), whereas in 1875 after the atlas was finished, we find Murray mentioning that its Biblical section had proved to be "far the most costly"; yet this section comprised many fewer maps than the Classical one, and all of them were engraved in London! It remains possible that Murray's outburst was intended as no more than a calculated negotiating ploy. If so, it hardly seems to have been successful. Thereafter in the surviving correspondence he raised no further protest at charges of comparable magnitude. Jacobs for his part exercised caution, but as early as 7 October 1860 proceeded undaunted:

J'ai examiné tres attentivement la carte des colonies Grecques et Phéoniciennes, c'est encore une carte fort considérable, quoique moins importante que le Peloponnèse [*Figure 3.5*]. Je demande, pour la gravure totale y compris le cuivre, la somme de 3000 francs, c'est le moindre prix auquel je puisse faire pour continuer de graver avec le même soin. Quant à la limite de

temps, j'aurai besoin de six mois d'un travail assidu pour l'exécution entière du travail.

In the same letter Jacobs goes on to report the progress made in revising the Peloponnese map and Greece at the Time of the Persian Wars (originally produced for Volume 4 of Rawlinson's *Herodotus*), and in completing the final corrected proof of Greece after the Doric Migration (a half-sheet, one-page map).

Je vous enverrai sous peu de jours de nouvelles épreuves du Peloponnèse, et j' m'empresse de vous rassurer la planche de cuivre et le travail ne seront nullement altérés, vous aurez des épreuves aussi bonnes que celles que vous avez déjà eues. Vous recevrez peut être en même temps ou peu après des épreuves terminées de la Grèce After the Doric Migration. Monsieur Müller m'a envoyé les corrections de cette carte et de nombreux changements sur la carte de la Grèce At the time of the Persian Wars, je m'occupe de les faire, et j'aurai bientôt fini.

The next letter from Jacobs, on 11 March 1861, offered a quotation for the sheet of Athens and Central Greece which was discussed in 1859.

Je viens, après un examen très attentif, vous soumettre le prix que coûtera la gravure de la carte intitulée: Attica, Beotia, Locris etc. Ce prix s'élève pour la topographie, la lettre et la fourniture

Figure 3.5 Jacobs' assessment of Map 9 Greek and Phoenician Colonies as "une carte fort considérable" is well borne out by this detail (original size). Also notable are the dozens of slender underlines which the colourist was required to add.

(Courtesy of the Wilson Library, University of North Carolina at Chapel Hill.)

du cuivre à 5000 francs. C'est 400 francs de plus que m'a coûté le Peloponnèse; mais comme il y a sur votre nouvelle carte un quart au moins de travail de plus que sur le Péloponnèse, je crois, en vous demandant un prix aussi modéré, vous témoigner du désir que j'ai de continuer mes relations avec votre honorable maison. Je vous demande un an, pour l'entier achèvement de la gravure, à partir du jour où vous m'aurez fait connaître votre approbation. Il est bien entendu, Monsieur, que vous pourrez, dans ce même espace de temps, m'envoyer d'autres dessins que je graverai simultanément, si vous continuez de désirer que le travail marche avec activité.

Quant à la carte des colonies Grecques, je ne dépasserai pas l'époque pour laquelle je me suis engagé, et j'espère que vous ne serez pas moins satisfait de

son exécution, que vous l'avez été de celle des cartes précédentes.

At the top of this letter a scribbled note has been added in a different hand: "Ansd Mar 23. To engrave at once at 5000 f as arranged J.M."

Jacobs' next letter, dated 16 January 1862, offered a quotation for a further half-sheet, one-page map, and reported progress on Athens and Central Greece:

J'ai examiné attentivement la carte intitulée: Greece in the beginning of the Peloponnesian War, et j'ai évalué la gravure: topographie, lettre et fourniture de cuivre à la somme de dix sept cents francs (1700 fr). La topographie de cette carte est très détaillée et exige, pour être bien exprimée, d'être gravée très finement.

Je comptais vous envoyer des épreuves de la carte intitulée: Attica, Beotia etc dans le mois de Mars, mais je m'aperçois que ce n'est que dans le mois d'Avril qu'il ne sera possible d'avoir terminé. Je mets, comme aux cartes précédentes, tous mes soins à ce travail, et j'espère que vous en serez satisfait.

The next letter from Jacobs, 5 March 1862, introduced mention of a map of Northern Greece for which the quotation (presumably offered some time in 1861), no longer survives. But it was concerned primarily with preparations for printing sheets, in all likelihood those which Murray intended to incorporate in the third edition of George Grote's *History of Greece*. Jacobs was no longer content simply to repeat his previous procedure of transferring the engraved image onto stone for lithography,²⁴ because this does not reproduce detail well, and in any case the printer to whom he had entrusted such work has retired. Instead he recommended the relatively new process of steel-facing the engraved copper plate:²⁵ this would allow printing direct from the plate itself, without the wear that had previously made it impossible to gain more than a limited number of good copies by such means.

Je m'occupe en ce moment à faire des reports sur pierre de vos planches de cuivre. Je ferai commencer le tirage au nombre d'exemplaires que vous m'avez désigné, lorsque j'aurai des reports satisfaisants, ce qui est fort difficile à obtenir surtout pour des cartes chargées de fins détails comme le Péloponnèse; l'imprimeur que j'avais employé pour les précédents reports et tirage s'était retiré des affaires.

Il y a, vous le savez Monsieur, un procédé dont j'ai fait souvent l'expérience, toujours avec succès, et qui n'attère en rien le cuivre, c'est l'aciérage, avec lequel vous avez le certitude d'avoir un tirage entier de bonnes épreuves. Si cependant vous préférez les reports, je ferai de mon mieux.

Je compte envoyer sous peu des épreuves de l'Attica à Monsieur Müller pour

les corrections et la révision de cette carte. Vous devez donc la recevoir, comme je vous l'ai promis, entièrement terminée dans le mois d'Avril. Quant à la carte intitulée: Northern Greece je puisse l'avoir finie dans le mois de Juillet.

La Perse et la Grèce doivent elles être coloriées? Si elles doivent l'être, coloriera l'on seulement la route de Xerxes sur la Grèce comme dans le dernier tirage [for Rawlinson]? Ou sera l'on un coloriage complet en mettant des feintes plates de couleur sur les terres, ainsi que l'indique les épreuves coloriées de M. Müller.

Jacobs returned to the choice of printing methods only two weeks later (19 March 1862), with a recommendation that the Peloponnese map be steel-faced, but that three other (unspecified) maps of Greece should be merely lithographed. This letter more than any other brings out how astonishingly undisciplined the process of making corrections was. Müller's perfectionist temperament evidently prompted him to go on and on correcting; meanwhile there seems to have been no co-ordination with Murray (and Smith?) in this regard.

J'ai fait de suite les corrections que vous m'avez envoyées, mais malheureusement le tirage de la Grèce était fait à plus de moitié (mille exemplaires) lorsque j'ai reçu votre lettre. Quelques unes de ces corrections avaient été faites déjà par M. Müller. Il m'avait fait ajouter... S. devant crucis [one word illegible; meaning unclear]; j'ai pensé que cette correction était bonne, et elle a l'avantage d'éviter une effacure qui occasionnerait un dégât assez considérable. De plus, M. Müller venait tout récemment de m'envoyer un assez grand nombre de corrections sur l'ensemble des cartes exécutées jusqu'ici, et je les avais faites, lorsque j'ai reçu les vôtres.

Je fais tirer par report trois de vos planches; quant au Peloponnèse, dont la gravure est très fine, je l'ai fait acieré; on garantit les 2025 épreuves dont vous avez besoin; mais c'est le maximum, un plus grand nombre exigerait un nouvel aciérage. Celui que j'ai fait faire coûte 60 francs. Mais si l'on devait tirer à grand nombre, l'acièreur m'a dit qu'il diminuerait un peu ce prix, peut-être l'obtiendrait l'on à 50 fr. C'est le moyen que l'on emploie au Dépt. de la Guerre pour la grande carte de France, l'on a renoncé aux reports sur pierre et à la galvanoplastie [i.e. electrotyping]; l'aciérage permettant en le renouvelant tous les 2 mille de tirer indéfiniment sans altérer en aucune façon le travail.

Veuillez me faire savoir, Monsieur, si les mille exemplaires déjà tirés de la carte de Grèce doivent être supprimés, ou joints au tirage que je fais continuer de la planche corrigée.

We lack Murray's answer to the last question, but we do have his note added at the top of the letter: "Answered Mar. 20/62 Plates all to be acierées as 10,000

impressions may be wanted—JM”.²⁶

In a brief letter dated 2 August 1862 Jacobs quoted 1300 francs for production of the halfsheet, one-page map *Empire of Alexander the Great* (“cuivre, lettre et topographie”), and undertook to complete the work in four-and-a-half months, or by 15 December. He also advised that he would complete the engraving of both Thessalia, Macedonia, etc. (i.e. Northern Greece) and Greece in the Beginning of the Peloponnesian War towards the end of September. He added that for the latter Müller had sent an inset entitled *Towns Tributary to the Athenians*, which he would incorporate. In the event this completion schedule slipped a little, because not until 23 October 1862 did Jacobs report that proofs of both maps would go out to Müller at the end of that month. At the same time he indicated that he would have the copper plate of the Attica map steelfaced so as to fulfil Murray’s order for 2,025 copies.

Four maps engraved by Jacobs were incorporated as uncoloured endpapers in the third (1862) edition of Grote’s *History*: the Peloponnese in volume I (with the sheet bearing the number 17); Northern Greece and Greek Colonies in volume II (numbered as 19 and 6 respectively); and Attica and Central Greece in volume IV (numbered as 18). Presumably this numbering represents a sequence for the Atlas that was subsequently abandoned. When the same four maps were incorporated in Grote’s fourth edition of 1872, they bear no numbers at all, while in the Atlas itself they are (listed in the same order as above), nos. 26, 24, 9 and 25 respectively.

The conclusion of Jacobs’ work

Apart from a note dated 10 December 1862 about the fulfilment of print orders, there is then no letter from Jacobs until 1 July 1863. This summed up the state of Murray’s account with him and raised the possibility that there might be no further call for his services.

J’ai suivant l’ordre que vous en avez donné, touché le 22 Juin 1863, de M[essieu]rs Galignani, la somme de treize cent cinquante francs—1350—pour l’Empire d’Alexandre et les corrections et coloriage des épreuves précédemment. Cette somme fait solde de tout compte entre nous, au 22 Juin 1863.

Voici une demande qui vous a été faite dans chacune de mes dernières lettres, c’est de savoir, si votre intention est de me continuer la gravure de vos planches ou comme, je suis porté à le croire, si, changeant d’idée vous le faites exécuter en Angleterre. Je vous prierais instamment de me répondre car dans

le dernier cas je désire ne pas garder vos cuivres. Veuillez alors, m'indiquer par quelle voie je dois vous les renvoyer.

The next letter, 10 May 1864, indicated that Murray had indeed asked for his copper plates to be sent to London (each to be steelfaced first, where that has not already been done). But at the same time he had also offered Jacobs two further maps, for which quotations were now supplied.

J'ai reçu les deux dessins que vous m'annoncez: la mer Egée et les Gaules.

D'après l'estimation que j'ai faite de ces cartes, la Mer Egée coutera 4200 francs, et la Gaule 3800 francs, cuivre, topographie et lettre. [A separate note on the letter adds sterling equivalents of £168 and £152 respectively.] Je ne pourrai pas avoir terminé ces 2 cartes dont la gravure marchera concurremment avant la fin du mois de Mars prochain.

Vous me demandez de vous envoyer toutes vos planches de cuivre en faisant acierier celles qui ne le sont pas. J'ai quelques observations à vous faire à cet égard: j'ai huit cuivres sur lesquels sont gravés 9 cartes. Voici leurs titres:

1 *Regnum Persarum Darii et Xerxis temporibus.*

2 *Greek and phoenician colonies.*

3 *Greece after the doric migration.—Greece at the time of the persian Wars*
(Les 2 cartes sont sur le même cuivre)

5 *Greece in the Beginning of the peloponnesian War* (cette carte n'occupe que la moitié du cuivre)

6 *Empire of Alexander the great* (Cette carte n'occupe d'un cuivre que la moitié)

7 *Hellas. Epirus. Thessalia. Macedonia.*

8 *Attica. Boeotia. Locris. Phocis. Doris. Malis.*

9 *Peloponnesus* (Ces 3 derniers cuivres sont acierés).

Ainsi il y a 3 cuivres acierés et 5 qui ne le sont pas. Sur ces 5 cuivres il y en a 2 dont la moitié seulement est gravée. Dois je vous les envoyer ou les garder pour en faire la gravure lorsque les dessins seront achevés. Ce serait donc 3 cuivres seulement à faire acierier et 6 alors à vous envoyer.

Monsieur vos cuivres représentant une valeur de 20.000 francs environ, je compte vous les envoyer comme objet de finance, le post en sera de 55 francs. Le chemin de fer répond de la valeur de l'objet expédié. Veuillez me faire savoir si cela vous convient. Je me conformerai à vos ordres aussitôt que vous m'aurez répondre.

Murray evidently declined the quotation for the Aegean map although he did accept the one for Gaul ([Figure 3.6](#)). In addition he agreed with Jacobs' suggestion that the two plates still left half-blank remain in Paris. Thus Jacobs

could next write on 15 June 1864:

Figure 3.6 Detail (original size) from Map 12 Gallia, the last commissioned from Jacobs. Although the lettering was for some reason engraved by Ramboz rather than by Jacobs's partner of long standing, Dalmont, its quality remains as fine as ever. Jacobs also collaborated with Ramboz on what must have been another of his last works, the Geological Map of Canada dated 1866.²⁷

(Courtesy of the Wilson Library, University of North Carolina at Chapel Hill.)

Je vous envoie les six planches de cuivre ainsi que je vous l'ai annoncé comme sujet de finance; elles sont en parfait état; si vous faites ôter le vernis dont je les ai enduites pour vous assurer de l'état des planches, je conseillerai ou de les faire revernir ou de les faire enduire d'huile fine mais dans ce dernier cas il faut avoir soin de renouveler l'huile de temps en temps, en un mot les planches exigent autant de soin que les planches d'acier pour éviter la rouille.²⁸

J'ai payé à l'aciéreur 130 francs pour les trois planches et j'ai 8 fr. de déboursé pour les autres frais, c'est donc 138 francs que vous me devez, mais il est inutile que vous me envoyiez cette somme; elle sera comprise dans le prochain compte.

Votre carte des Gaules est en cours d'exécution. J'espère vous la livrer avant l'époque que je vous ai fixée.

The final letter from Jacobs (in an exceptionally tiny, crabbed hand, most worthy of an engraver) is dated more than two years later, on 17 September 1866. He reported the dispatch of the plate for the Gaul map together with the two half-blank plates held back earlier, and expresses regret that ill-health now prevented him from undertaking any more of Murray's work. Whether Murray had in fact offered further maps, or whether he had already decided to use London engravers (as Jacobs had long feared), is left obscure. Müller, too, may have mentioned already that he had it in mind to return to Göttingen, so that the advantage of having map compiler and engraver in the same city would have been lost anyway. Perhaps it was just the combination of circumstances which led Murray to turn to London engravers, rather than any strong prejudice either in their favour or against Jacobs.

J'ai fait remettre ce matin, au chemin de fer du nord, la caisse renfermant vos trois planches de cuivre, j'ai pris toutes les précautions pour qu'elles vous arrivent en bon état. Je vous prierai lorsque vous aurez reçu l'envoi et que vous aurez fait vérifier le contenu de m'en accuser réception. Vous me devez 50 francs pour l'aciérage de la Gaule, plus 10 francs pour les frais d'emballage et de transport, en tout 60 francs.

Je regrette, Monsieur, que ma mauvaise santé me force à renoncer à vos

travaux, j'ai fait tout mon possible pour les exécuter avec le soin qu'ils méritent, j'espère que vous le reconnaîtrez; de mon côté je n'ai en qu' à me louer de mes rapports avec vous aussi Monsieur si pour la suite vous avez quelques renseignements à demander que je puisse vous fournir, croyez bien que je m'empresserai de la faire.

He adds a postscript drawing attention to the steelfacer's flier enclosed ([Figure 3.7](#)).

Correspondence with Grove

In 1864, under circumstances which leave no trace in the surviving record, Murray decided to expand what had been just Smith's classical atlas by adding a biblical section to be edited by George Grove. Only a few letters between Murray and Grove are preserved in the former's files, but these do shed further light on the making of the atlas.

First we have Murray's confirmation of Grove's engagement as co-editor for the expanded work, dated 5 October 1864:

I waited to see Dr. Smith to be quite sure of the terms and conditions proposed to you for directing and superintending the preparation of the Biblical Atlas, which is to form part of Dr. Smith's great Atlas of Ancient Geography. I agree to defray all expenses in producing the work and to pay

Figure 3.7 Steelfacer's flier enclosed by Jacobs with the last of his letters to Murray. Note its claim that the cost of steel-facing was about half that of electrotyping.

(Courtesy of John Murray Ltd.)

you—who bear no part of the risque, one fourth share of all profits arising from the sale of the said Biblical Atlas. As it will form part of another work, of course the whole copyright will rest in me subject to the above conditions.²⁹

The next letter comes a decade later—from Grove to Murray on 16 October 1874—when the completed atlas is being advertised. Grove's complaint is clear enough, but the purpose and nature of Smith's proposal are obscure:

I see that you have omitted my name in the advertisement of the Atlas in the Quarterly. I certainly told Smith on Tuesday that I was willing to give up my

money-interest in the work, and that I had not been able to do all that I should have liked to do: but nothing was said about my name being withdrawn from the title page, and such a thing alters entirely the complexion of the proposal which Smith made me.

In all likelihood the omission of Grove's name was a mere oversight. As might be expected, he is featured prominently on the title-pages dated 1874 and 1875, and Smith's Preface gives due credit to his role in the work. However, the issue of the money-interest reappears in a letter from Grove dated 9 June 1875.

My conversation with Smith was so long ago (13 Oct. 1874) that really it had quite passed out of my mind, and recent matters have given the Atlas fresh interest to me.

I should be very sorry to interfere with your arrangements in any way, and if you press the money on me I will give it more consideration; but it is hardly sufficient to compensate me for giving up my interest in your house and yourself, and in a work which I have worked hard for and am proud of. You know I always valued such considerations more than money, and if you will allow me I should like to abide in the same frame of mind still. Please let me hear from you; and you will not consider that in returning the awkward bit of paper I am hurting your feelings?

[As a postscript:] I feel very sure the Atlas will answer in the long run.

Murray wrote a reply to Grove the following day, but did not send it (so that it remains at Albemarle St.). Instead, on 11 June 1875, he made it the basis for a fuller reply, which was sent.

The impression left on Dr Smith by the conversation with you of Octr 1874 was that you preferred a sum of 50 Guineas to a chance of a contingency from a possible success of the Ancient Atlas. A glimpse at the accounts also has proved to me that the Balance was so *very* far on the wrong side that you had probably made a not unwise decision. Your note returning my cheque proves that you have come to a different conclusion and I have therefore the painful duty of informing you that taking into account the proceeds of the sale of 1000 copies of the Atlas, there remains a deficiency of about £4000!! The completion of the accounts in a few days hence will enable me to state the sum precisely. Time alone will show whether so large a loss can be wiped off by future sales. The Biblical section of the work unfortunately in which you alone are concerned has been far the most costly. I fear you did not anticipate such a result as this, but we must have hope and patience we publishers!

Grove's reaction of 15 June 1875 was both prompt and dignified:

‘Blessed is he that hopeth for nothing for he shall not be disappointed’. I had hoped for nothing from the Atlas, but the pleasure of working with you and Smith on a subject that I dearly loved—I am quite content to go on in the same frame of mind.

Financial reckoning

The final account for the atlas dated 30 June 1875³⁰ lists payments (all in sterling) to Dr. Müller of £611 for “drawing Maps”, and £30 for “writing Memoir” [i.e. most of the atlas text]; to Mr. Jacobs of £629.7s.7d. for engraving; to Stanford³¹ of £2585.19s. for drawing and engravings and £369.18s. for printing maps; to Weller³² of £914.2s.6d. for drawing and engravings, and £454.10s.6d for printing maps; and £49.18s.4d. for steelfacing maps. It remains unclear how the maps originally drawn and engraved for Rawlinson’s *Herodotus* were charged. However, the Rawlinson accounts contain no item for engraving by Jacobs.³³ There is a payment of £112.17s. on 26 January 1858 to “Dr. C. Müller per Galignani”, but the reason for it is not specified.

Time was in fact to show that the large loss on the atlas could not be wiped off, so that Murray’s “hope and patience” were to be strained to the full. Not until the 1890s, it would seem, was the original print-run of about 1500 copies sold out, and even then a loss of over three thousand pounds remained.³⁴ Although the Murray family hoped otherwise, the deficit was hardly reduced by the adaptation of some plates for use in the *Handy Classical Maps* series at the turn of the century.³⁵ Even so, the loss also needs to be seen in a larger and more positive light. Murray, it must be remembered, was a hugely successful and sought-after publisher. During the late 1850s, for example, when the atlas was getting under way, he was publishing both Livingstone’s *Travels* and Darwin’s *Origin of Species*. He realized that not all his major academic enterprises would prove profitable (though most were), but proudly supported them none the less. His elder son made that point in a Memoir with reference to his father’s extensive collaboration with Smith, and incidentally offers us a yardstick against which to measure a loss of three to four thousand pounds.

Together they [Murray and Smith] planned and carried out the Dictionary of the Bible, the Dictionaries of Greek and Roman Antiquities and Biography, and those of Christian Antiquities and Biography, the Latin-English and English-Latin Dictionaries and the Classical Atlas, as well as many minor works which still hold their own as monuments of English scholarship. These enterprises, together with the Dictionary of Hymnology and the Speaker’s Commentary,

involved an outlay of close on 150,000 *l*. In all cases he had long to wait before his outlay was recouped, and in one or two instances it is probable that it never will be repaid; but, with him, good and creditable work was an incentive as strong as the prospect of financial profit.³⁶

Lastly in connection with the loss on the atlas, we are bound to reflect (pedestrian sentiment though it may be) that Murray inevitably paid a price for his blithe lack of concern to control costs more. While it is true that he did curb the most ambitious of Müller's plans, he was still lax about seeking advance quotations for major work, and he tolerated an excessive amount of expensive correction in proof. But such close management was evidently unappealing to him, and in practice he could afford not to adopt it.

The unshakable superiority of engraving

From all the exchanges concerning the production and printing of the atlas, what emerges most forcefully is the unquestioning confidence placed throughout in the superiority of copperplate engraving despite its slowness and expense.³⁷ Modern scholarship has understandably chosen to concentrate its focus upon the development of cheaper, more efficient methods, lithography in particular; and there is no doubt that these new techniques permitted sweeping changes in cartographic production after the first quarter of the nineteenth century.³⁸ In consequence (inevitably perhaps), less attention has been paid to the remarkable fact that the use of engraving persisted well into the twentieth century. Moreover those who continued to hold that a map of the highest quality had to be engraved were by no means out of touch with the advances in technology. Rather, they exploited these advances selectively in order to assist their continued commitment to engraving.

The main drawback to the use of engraving had always been the limited number of copies that could be printed off a plate before the fine detail was irreparably worn by the pressure on the press. Three solutions to this problem were cited in Murray's correspondence. First, as Müller arranged in his letter of 18 October 1858 (Appendix, Letter 3), it was possible to transfer the engraved image on to stone and then to print lithographically, so that the copper plate would remain undamaged. The logical inference that engraving might therefore be dispensed with altogether was apparently not drawn, and indeed it is true that corrections could be made with greater ease on copper than on stone,³⁹ provided the plate did not become worn from too many of them, as Jacobs indicated in several of his letters.⁴⁰

Second, the invention of electrotyping offered a method for the mechanical duplication of a plate, so that if a large print-run were called for, one or more copies of the original plate could be made before it became worn on the press. Equally, by this means a fresh copy could be made of a plate worn by multiple corrections.⁴¹ Of course, electrotyping was more economical than reengraving of a plate by hand. But cheaper still, according to Jacobs' letter of 19 March 1862, was the third method of *aciérage* or steel-facing, which even the French Dépôt de la Guerre is said to have gone over to. Steel-facing allowed up to 2000 or so maps to be printed direct from an engraved plate without damage to it; and provided the process was reapplied at the same interval, it was possible to go on printing from the plate indefinitely. It is therefore understandable that in 1864, before having plates transferred from Paris to London, Murray asked for each to be steel-faced where that had not already been done.

From the 1860s the steel-facing process in particular offered a new lease of life to the production and printing of maps on engraved copper plates, and the final account for the atlas dated 30 June 1875 confirms that Murray continued to have all the maps for the volume engraved on copper plate and steel-faced. The exceptionally full record relating to his atlas acts as an important reminder of the surprising number of publishers who, for a variety of reasons, persisted with this method of map making as late as World War I.⁴²

Acknowledgements

Special thanks are due to John Murray Ltd. for access to its correspondence and records; to the John Murray archive in the Louis Round Wilson Library, University of North Carolina, Chapel Hill, which now holds the collection of one copy of each Murray publication once maintained by the firm (the 'file copies'); to the University Photographic Services for producing all the map figures from copies in the archive; and to Mary Pedley for guidance and encouragement. In London, Murray's preserve correspondence *received* by the firm in bundles by writer's name, so that letters can only be identified by that name and the date: what survives seems random. Correspondence *sent* by the firm is in Letter Books, but prior to the 1890s it comprises only a few letters of special importance that were copied into these; from the 1890s the use of an early carbon-paper process led to the keeping of a much more complete record. An account of each publication's costs, printings and sales is preserved in Copies Ledgers.

Appendix

Summary of maps commissioned from S. Jacobs

The maps are listed below in the order that they were quoted for and/or engraved by Jacobs. Header numbers are those of the eight copper-plates listed by him on 10 May 1864 and valued then at 20,000 FF. Later, he used one more for Gallia.

1 Regnum Persarum (= Twenty Satrapies?)

3b Greece at the Time of the Persian Wars (1 pg.)

Expected total production time: 2 months

3a Greece after the Doric Migration (1 pg.)

9 Peloponnese

Charged 4603 FF.

2 Greek and Phoenician Colonies

Quoted 3000 FF. Time requested: 6 months ('travail assidu')

8 Central Greece/Athens

Quoted only 5000 FF, even though Jacobs estimated that this map called for 25 percent more work than had Peloponnese. After the dispute over the cost of that map, however, he was concerned lest Murray be deterred from sending him further ones. Time requested: 1 year

5a Greece in the Beginning of the Peloponnesian War (1 pg.)

Quoted 1700 FF (without inset, presumably). For some reason, in this instance the finished map does not carry its engravers' names.

[5b blank]

Quotation not preserved

6a Empire of Alexander the Great (1 pg.)

Quoted 1300 FF. Time requested: 4 ½ months

Jacobs's final charge was 1350 FF to cover production, corrections, and colouring of the proofs (see his letter of 1 July 1863)

[6b blank]

Subsequent quotations:

Aegean Sea

Quoted 4200 FF. Time requested: 10 months. In the event, for whatever reason, Jacobs did not proceed with this map.

Gallia

Quoted 3800 FF + 50 FF later for steel-facing. Time requested: 10 months.

Letters from C. Müller preserved at 50 Albemarle St., London

Each letter is written on a single sheet of plain white paper measuring just under 11 × 8.5 in (29.2 × 21.5 cm). One fold creates four sides each just under 5.5 × 8.5 in (14.5 × 21.5 cm). Müller always left an ample left-hand margin, except on the fourth side of Letter 4. The inconsistencies of his French accentuation (thus “Hérodote” may or may not carry an acute accent) have not been corrected.

John Murray, it might be added, would have been perfectly content to receive correspondence in French. He was not only a seasoned European traveller, but also the first writer of the red travel guidebooks with which his

firm was to become particularly associated.

Letter 1

Paris le 25 Decembre 1856.

rue Monsieur le Prince, 48.

Mon cher Monsieur, [Murray]

Dans votre dernière lettre du 2 Juin vous avez eu l'obligeance de m'informer que ma carte des vingt Satrapies de Darius se trouvait entre les mains de Monsieur Rawlinson, et que sous peu elle me serait renvoyée afin que pusse en profiter pour la carte générale qui se trouve toute prête à recevoir les dernières modifications.

Cependant depuis cette date un temps considérable s'est passé sans que cette carte me soit parvenue. Veuillez donc m'excuser, Monsieur, si, dans mon inquiétude, je vous demande si elle se trouve toujours entre les mains de Monsieur Rawlinson, ou si d'autres causes ont occasionné ce retard inattendu.

Sous un certain rapport je ne suis point fâché d'un retard qui nous met à même de profiter d'une recente découverte [unidentified] faite dans la Russie méridionale, découverte qui jette un jour nouveau sur un des points les plus difficiles de la géographie d'Hérodote.

D'un autre côté l'examen de plusieurs passages de Hannon, d'Hérodote, Xenophon etc., relatifs aux systèmes géographiques antérieurs à celui de Dicéarque et de l'école d'Alexandrie m'a depuis convaincu que les géographes ioniens se figuraient la situation reciproque des trois continents relativement aux quatre points cardinaux d'une manière différente de celle qui depuis Dicéarque a été généralement adoptée. Je discuterai ce point dans les *Prolegomena* du 3me volume de mes géographes [never published], dessinés en grande partie à un exposé des anciens systèmes de géographie à partir d'Hécatee et d'Herodote. Mais je n'ose point introduire cette innovation dans la carte générale d'Hérodote à moins que je n'obtienne votre assentiment après avoir soumis à votre appréciation les raisons que je voudrais faire valoir.

J'espère avoir le plaisir de vous en parler dans une de mes prochaines lettres. En attendant je vous prie de bien vouloir, par un mot de reponse, éclaircir ma religion sur le sort de ma carte des XX satrapies, et d'agréer l'expression du profond respect, avec lequel

j'ai l'honneur, Monsieur,

d'être votre tout-dévoué serviteur,

Carl Müller.

Letter 2

Paris le 2 Août 1858.

Boulevard du Mont-Parnasse, 140.

Monsieur [Murray]

Hier, j'ai reçu de votre honorable maison un paquet renfermant, outre le dessin d'une carte, le Dictionnaire de géographie et l'Hérodote de M. Rawlinson. Monsieur le Dr. Smith, dans sa dernière lettre, me prie d'accepter de sa part le premier ouvrage, et me fait savoir que je dois regarder le second ouvrage comme un présent que Vous, Monsieur, avez daigné m'offrir.

Suffi agréablement surpris que profondément touché de ce témoignage de votre bienveillance, je vous prie d'agréer mes sincères remerciemens et l'expression de ma plus vive reconnaissance.

Heureux d'être possesseur de ces livres magnifiques, je tâcherai d'exploiter au profit de Votre Atlas les richesses scientifiques qu'ils renferment, et j'y mettrai d'autant plus de zèle que je n'ai point d'autre moyen de vous prouver combien je desire de ne pas paraître indigne de l'attention dont vous avez bien voulu honorer

votre très-humble et très obéissant serviteur

Charles Müller

Letter 3

Paris le 18 Octobre 1858.

Boulevard du Mont-Parnasse, 140.

Monsieur [Murray]

D'après les instructions que vous avez bien voulu m'adresser dans votre lettre du 15 Septembre, j'ai fait les quelques changemens que M. Rawlinson désirait

introduire dans sa carte, ensuite j'ai fait reporter sur pierre la gravure de la planche, et j'en ai fait tirer 1260 exemplaires, que j'ai mis entre les mains du coloriste, qui, aujourd'hui, vient de me livrer les premiers 800 exemplaires, que vous désiriez avoir vers le milieu du mois d'Octobre, et que vous devez recevoir demain par les messageries. Si je suis en retard de quelques jours, c'est la faute du coloriste, et je vous prie de bien vouloir m'excuser.

Le tirage me semble avoir assez bien réussi. Quant au papier, je ne sais si je l'ai choisi tel que vous le vouliez, puisque là-dessus vous ne m'aviez pas donné des instructions bien prévues. Après le coloriage les feuilles ont été satinées.

Je vous adresse ci-joint la note de l'imprimeur. Dans quinze jours vous recevrez les 260 [*sic*] exemplaires qui nous restent.

Quant aux huit cartes de la Grèce, les dessins, qui ont demandé beaucoup de temps, sont entièrement terminés, et je m'occupe en ce moment de l'écriture. Comme ces cartes sont étroitement liées entre elles et que, pour faire l'une il faut souvent avoir recours à une autre, je ne vous les enverrai pas une à une, mais je ferai partir plusieurs à la fois. Sous peu j'espère avoir le plaisir de vous envoyer, à vous et à M. le Dr. Smith, les deux feuilles du Peloponnèse.

Veuillez agréer l'expression du profond respect et de la haute considération, avec lesquels

j'ai l'honneur, Monsieur, d'être votre haut-dévoué serviteur

Charles Müller.

Letter 4

Paris le 17 Mars 1859. Boulevard Montparnasse 140.

Mon cher Monsieur [Smith]

Je vous remercie de la bienveillance avec laquelle vous avez bien voulu juger, après un premier et rapide examen, mon petit travail cartographique sur le Péloponnèse. Soyez assuré que je ne m'endormirai pas sur ces lauriers et que vos éloges me seront avant tout un encouragement de faire mieux.

Aujourd'hui j'ai porté aux Messageries la carte de la Grèce aux temps de la guerre contre les Perses, carte que M. Murray voulait avoir le plus tôt possible pour l'Hérodote de M. Rawlinson. Elle ne forme que la moitié d'une feuille de votre Atlas, l'autre moitié étant réservé à la Grèce des époques antérieures, dont je ne me suis pas encore occupé pour ne pas faire attendre trop long temps M. Murray.

La carte destinée à l'Herodote sera gravée sur *cuivre* de manière qu'il n'y aura de cadre que sur *trois* cotés; le cadre du 4me côté sera dessiné sur la *pierre*, ainsi que le titre, qu'on pourra mettre au dessus du cadre ou, si l'on supprime le plan de la bataille de Platées, dans le coin de la carte. Le dessin du terrain dans ce plan et l'importante indication du second chemin qui traverse la montagne du Cithaeron ont été pris dans la carte [illegible word]. Je desirerais conserver le plan, qui remplit utilement un grand vide et sert de pendant à la petite carte de la Grèce heroique dans l'autre moitié de la feuille. Je ferai le mémoire lorsque je finirai ces cartes pour l'Atlas.

Après ceci j'arrive à la grande question du jour. Monsieur Murray, dites-vous, s'effraye des frais de gravure, si l'on grave les cartes belles que je les ai faites. Pour diminuer la dépense, vous voulez supprimer les noms modernes et démolir tous les plans que j'ai batis avec tant de peine. Je dois m'incliner devant ces décisions, et plus d'un les accepterait d'autant plus volontiers qu'elles simplifient son travail. Mais comme dans toute cette affaire je suis guidé par l'intérêt de la science plutôt que par de motifs d'un ordre purement matériel, je ne voudrais pas me soumettre sans avoir fait un petit essai de revolte. Vous savez bien que per totum orbem terrarum il n'existe pas d'Atlas ancien qui vaille. Tout ce que la librairie porte chaque année au marché, est de la camelotte, comme disent les Francais, sans valeur ni scientifique ni artistique. Qui donc nous délivrera de tous ces maux si ce n'est Monsieur Murray? qui donc pourrait supporter les frais d'un atlas si ce n'est le gigantesque Atlas de la librairie de la grande Bretagne! Mais pour en venir au fait, tout le monde sera d'accord que la mention des localités modernes est d'une grande utilité pour l'intelligence d'une carte ancienne. Je concède que j'en ai mis plus qu'il n'était absolument nécessaire, et je suis prêt à en effacer le deux tiers, pourvu qu'on me laisse subsistés ceux qui me semblent indispensables pour l'intelligence des articles du Dictionary ou de mon mémoire. Mettons qu'il en reste sur chaque feuille 200 ou même 300. Combien coutera la gravure de ces noms, qui tous seront gravés en *petites italiques* à 6 ½ francs par cent? Cela sera 13 à 20 francs, 10 à 15 shillings. Il me semble que cela n'est pas chère et qu'il ne vaut pas la peine de s'en passer. En outre, faisons remarquer que ces noms modernes ne se trouveront que dans les grandes cartes topographiques, qui dans notre Atlas sont en grande minorité.

Quant aux plans, ceux qui se trouvent dans la carte de Laconie et de Messenie, étant placés dans les espaces occupés par la mer, pourraient être enlevés sans inconvenience; il en est cependant un qui se trouve au coin nord-est de la carte à la place qu'occupe une partie de l'Argolide; si l'on l'ôtait, il faudrait redessiner l'Argolide, ce qui serait inutile et ne donnerait aucune économie. Mais des innovations assez graves se présenteraient si l'on enlevait les plans qui dans l'autre carte occupent la place de la Grèce centrale; il

faudrait les remplacer par un dessin nouveau qui coûterait plus cher que les plans, et qui cependant serait inutile, puisqu'il doit se trouver dans une autre carte; si, au contraire, on voudrait laisser tout cet espace en blanc, cela serait fort mauvais effet. J'ai mis autant de plans qu'il était possible d'en mettre, parceque telle était votre volonté; si l'on m'avait dit, qu'on ne voulait pas de plans, j'aurais disposé les deux cartes d'une autre manière. À présent il y aurait un grand travail à faire si l'on voulait changer tout cela en vue de faire des économies. C'est pourquoi je me permets de vous prier, vous et M. Murray, de laisser les plans de ces deux cartes, ou du moins le plus grand nombre, à leurs places, et de faire porter les économies sur d'autres points des cartes. Je vous proposerais de ne pas faire graver *le detail du terrain* de la Messenie et de la Laconie dans la carte de la partie septentrionale, ni le detail du terrain de l'Elide et de l'Arcadie dans la carte de la partie méridionale du Peloponnes. L'indication des frontières, des fleuves et des principales positions doit suffire pour ces parties, qui se retrouvent dans tous leurs détails sur la carte qui donne tel ou tel pays dans sa totalité. L'économie qui en resultera, sera considérable.

Du reste les deux cartes du Peloponnesos sont les seules qui ont tant de plans. Les autres six dessins, qui sont faits jusqu'à present, n'en ont que fort peu parce que je n'avais pas de plans pour en mettre; et je vous promets d'ôter parmi ces plans tous ceux dont on pourra se passer. La première carte que je vous adresserai, celle d'Attica, d'Athènes et de ses environs, est disposée de la manière suivante.

Attica	Athenes	
environs d'Athen	ports	acropol
Eleusis	Marathon	

Fort probablement je quitterai prochainement la ville de Paris pour aller à Goettingue, parceque j'y trouverai pour mes travaux de geographie et d'histoire plus de ressources et de facilités qu'à Paris, et en outre parceque les cartes qui accompagneront mes *Geographi Minores* seront gravées non loin de Goettingue, à Gotha ou à Weimar; car M. Didot trouve que les graveurs de Paris sont peu trop chers et il espère obtenir une economie notable en passant graver en Allemagne. Dans le cas ou vous et M. Murray voudriez de même faire la gravure en Allemagne, je vous prierais de me le faire savoir.

Agréez, Monsieur, l'assurance de mon profond respect et de mon entier devouement.

Votre humble serviteur Charles Müller

Paris le 26 Mars 1859.

Boulevard du Montparnasse, 140.

Monsieur, [Murray]

En reponse à votre dernière lettre j'ai l'honneur de vous annoncer que je n'ai pas perdu un moment pour mettre entre les mains du graveur la carte que j'ai reçu dans la journée d'hier. Conformement à vos ordres j'ai exigé qu'on y travaille sans discontinuer et qu'on me fixe un terme pour la livraison de l'ouvrage. Le graveur du dessin et celui de la lettre m'ont promis de faire chacun la partie qui le concerne, dans l'espace de trois semaines, de sorte que d'aujourd'hui en six semaines je pourrai vous envoyer une épreuve. Le report sur pierre, le tirage et le coloriage ne demandent pas beaucoup de temps. Pourvu que M. Rawlinson me renvoie promptement l'épreuve qu'on lui adressera, vous pourrez avoir dans deux mois le nombre d'exemplaires qu'il vous plaira de fixer.

Vous me demandez, Monsieur, s'il y a en France quelque bon manuel de géographie ancienne, que vous pourriez mettre à profit pour une publication analogue. Je puis vous assurer que dans ce genre la France n'a absolument rien qui mérite d'être mentionné. Dans les collèges français l'étude de la géographie ancienne est fort négligée et les petits livres élémentaires qu'on met entre les mains des enfants, n'offrent rien qui pourrait être de quelque utilité à une publication qui doit porter les noms de Mos. Murray et Smith, et occuper, dans son genre, la même place éminente que votre *Dictionary* occupe parmi les grands ouvrages capitaux.

Veillez agréer l'expression du profond respect et de la haute considération avec lesquels j'ai l'honneur, Monsieur, d'être votre tout-dévoué serviteur,

Charles Müller

Notes

- 1 See 'Sir William Smith (1813–93),' *Dictionary of National Biography* 18: 561–62; and 'Sir George Grove (1820–92),' *Dictionary of National Biography* 22: 794–96.
- 2 'John Murray (1808–92),' *Dictionary of National Biography* 13: 1291–93.
- 3 For its scope and importance see further R. J. A. Talbert, 'Mapping the classical world: Major atlases and map series 1872–1990,' *Journal of Roman Archaeology* 5 (1992): 5–38, cited on 6–9, 31–32.

- 4 'Alexander Keith Johnston (1804–71),' *Dictionary of National Biography* 10: 942–43.
- 5 Meanwhile Johnston proceeded independently, issuing his quarto *Atlas of Classical Geography* in 1853.
- 6 Smith and Murray continued to admire Johnston's products, however. The paper covers in which the five Parts of their classical atlas were first issued between 1872 and 1874 all carry the proud claim: "The Maps are of the same size as those in KEITH JOHNSTON'S ROYAL ATLAS OF MODERN GEOGRAPHY, with which the present Atlas will range."
- 7 To the information in my own study cited in note 3 above, add that supplied by R. Baladié, 'Pour une nouvelle édition des Géographes Grecs Mineurs,' *Cahiers du Centre Georges Radet* (Bordeaux) 2 (1982): 1–14, esp. note 7, kindly drawn to my attention by the author. Müller had returned to Göttingen by 1869 and died there in 1894.
- 8 See P. Petitmengin, 'Deux têtes de pont de la philologie allemande en France: le *Thesaurus Linguae Graecae* et la "Bibliothèque des auteurs grecs" (1830–1867),' 76–107 in M. Bollack et al. (eds.), *Philologie und Hermeneutik im 19. Jahrhundert*, vol. 2 (Göttingen, 1983).
- 9 The original proposal for this translation was made to Rawlinson by John Murray in a letter dated 5 December 1850. The four volumes of Rawlinson's *Herodotus* were published by Murray between 1858 and 1860.
- 10 On Jacobs and Dalmont, see further the brief entries in R. V. Tooley, *Tooley's Dictionary of Mapmakers* (New York and Amsterdam, 1979).
- 11 For this and other addresses in the city, see J. Hillairet, *Dictionnaire Historique des Rues de Paris*, 2 vols (Paris: Editions de Minuit, 1963), and *Supplement* (1966).
- 12 Presumably this is the stage referred to without any distinctive name in the section 'Printing from Copper-Plates,' 213–15 in *Account of the Methods and Processes Adopted for the Production of the Maps of the Ordnance Survey of the United Kingdom*, revised ed. (London: H.M.S.O., 1902): "About 20 impressions are printed at first from each copper-plate; these are dried, and placed between glazed boards in a hydraulic press for about 18 hours, to impart a smooth surface to them.... Between the ramhead and the top of the press there are several thick iron shelves, truly planed and notched to slide vertically between the guides; these shelves and the ramhead carry layers of glazed millboards alternating with the maps to be pressed. On the pumping apparatus being worked the ram is lifted, and the alternate layers between it and the top of the press are subjected to such powerful compression that the faces of the maps acquire the smoothness of the glazed boards with which they are in contact. The maps usually remain under pressure about eighteen hours." In Ordnance Survey practice, such smoothing of uncoloured maps was particularly necessary, because before printing the surface of the paper was "rubbed with a hard brush, to roughen it slightly, so that it may take the ink readily"; however, this stage was omitted for maps that were to be coloured. It would appear not to have been O.S. practice to smooth or 'satin' maps after colouring, as Müller evidently arranged in this instance.
- 13 The figure 260 in the letter itself must be a slip.
- 14 The second volume of *Geographi Graeci Minores*, which appeared in 1861, is presumably meant, although—for whatever reason—the maps to accompany it were never issued. Müller's claim for the superiority of Göttingen over Paris as a centre to meet his needs must in part stem from its importance as a centre of German classical scholarship, but it could also be that he found materials more accessible there than in Paris. On Paris, see J. W. Konvitz, *Cartography in France 1660–1848: Science, Engineering, and Statecraft*

- 15 K. S. Pearson's generalization is thus borne out here: "On the whole, hand colour was more a means of highlighting the map than a self-sufficient method of depicting information" ('The nineteenth-century colour revolution: Maps in geographical journals,' *Imago Mundi* 32 [1980]: 9–20, 15). On hand colouring, see further in particular the final paragraph of Jacobs' letter of 5 March 1862 below; and H. M. Wallis and A. H. Robinson (eds.), *Cartographical Innovations: An International Handbook of Mapping Terms to 1900* (Tring: Map Collector Publications in association with the International Cartographic Association, 1987), 249–50. It is notable that after disappointing progress with attempts to print coloured maps from 1886, the Ordnance Survey set up its own hand-colouring department as late as 1901 (W. A. Seymour (ed.), *A History of the Ordnance Survey* [Folkestone: Dawson, 1980], 185, 202).
- 16 Letter Book, p. 53. *Herodotus*, vol. 4, seems to have been issued early in 1860, certainly by 14 March, when a letter from Rawlinson to Murray acknowledges receipt of copies.
- 17 The engraving was finished by the end of July 1860, with the mountains alone having taken seven months: see Jacobs' letter of 18 September 1860 below.
- 18 In his letter of 24 March 1856 (above), Smith had hoped that a double spread might be engraved for about 740 francs!
- 19 Most probably the half-sheet Greece after the Doric Migration: see Jacobs' letter of 7 October 1860 below.
- 20 Observe that Murray never found fault with the time that Jacobs took over engraving, and he may indeed not have been unduly slow by the standards of the profession. It is clear enough that the engraving of detailed maps could take years: see, for example, D. Woodward (ed.), *Five Centuries of Map Printing* (Chicago, 1975), 8–14, 65; E. Jäger, 'Löhne für Zeichner und Stecher von Landkarten. Beispiele aus der europäischen Landkartenproduktion des 15. bis 19. Jahrhunderts,' 109–28 in V. Schmidtchen and E. Jäger (eds.), *Wirtschaft, Technik und Geschichte: Beiträge zur Erforschung der Kulturbeziehungen in Deutschland und Osteuropa* (Berlin, 1980), discusses much eighteenth-century work, but only one special case from the nineteenth; Seymour, *History of the Ordnance Survey* (note 15), 164, 200; J. Dörflinger, 'Time and cost of copper-plate engraving: Illustrated by early nineteenth century maps from the Viennese Firm Artaria & Co.,' *Imago Mundi* 35 (1983): 58–66; C. Lemoine-Isabeau, *La Carte de Belgique et l'Institut Cartographique Militaire (Dépôt de la Guerre) 1830–1914* (Brussels, 1988), 126.
- 21 Isidore Dalmont (note 10). In the completed atlas his name appears as engraver alongside that of Jacobs for Maps 4, 9, 21, 24, 25, 26.
- 22 In the published atlas, the text (p. 21) to accompany the map (no. 26) specifically warns that the figures on it are metric.
- 23 For comparative costs, see further the works cited in note 20 above. Professor D. M. Reid observed to me that in France at this date the daily wage of a skilled worker would typically have ranged between 3 and 5 francs.
- 24 See Müller's Letter 3 in the Appendix.
- 25 Discovered in 1857: see Woodward, *Five Centuries of Map* (note 20), 73. *O. S. Account* (note 12), 223–24, describes the process: despite the name, the facing was in fact iron.
- 26 It seems to have been the norm for letters posted in Paris one day to be delivered in London

- the next: this is demonstrated by the postmarks, which were normally applied in both cities.
- 27 See P. H. von Bitter, 'William Logan: Canada's geology mapped,' *Rotunda* (Winter 1993/4): 27–33.
 - 28 O. S. *Account* (note 12), 214, recommended that copper plates be covered in oil for storage or, if steel faced, coated in varnish and wrapped in canvas—to reduce the risk of the iron rusting (224).
 - 29 Murray's Letter Book, p. 229. Grove's brief acknowledgement of 11 October 1864 is also preserved.
 - 30 Murray's Copies Ledger G, p. 109; see also p. 206.
 - 31 'Edward Stanford (1827–1904),' *Dictionary of National Biography Missing Persons*, 629–30. Stanford's Geographical Establishment, London, and Edward Weller (below) took Jacobs' place in the production of the atlas.
 - 32 For Edward Weller (d.1884), see Tooley, *Tooley's Dictionary of Mapmakers* (note 10).
 - 33 Murray's Copies Ledger E, p. 208.
 - 34 Murray's Copies Ledger G, pp. 109–10. The figure of 1500 includes copies shipped to Little, Brown and Co. for its edition issued from Boston.
 - 35 On 9 November 1897 A. H. Hallam Murray (younger son of John Murray who died in 1892) lent G. B. Grundy a copy of the atlas, with the proviso "as it is the last, or the last copy but one that we possess, I am sorry to say that we cannot have the pleasure of giving it to you, as we should otherwise like to do." He continues, "I fully appreciate what you say with regard to the issue of an entirely new Atlas; but when I tell you that the existing Atlas cost us between £7/8,000 to produce, and has left us with a debt of over £3,000, you will realize what a very serious undertaking it would be; and at the present moment we do not feel disposed to embark in such a gigantic work; in fact it was in the hope that some of the debt might be cleared off that we are now trying to make use of the plates for a popular Atlas" (Letter Book 8. pp. 133–34). On *Murray's Handy Classical Maps* and *Murray's Small Classical Atlas*, see Talbert, 'Mapping the classical world' (note 3), 9–11, 32–33. The Small Atlas must quickly have become profitable, but Murray's Copies Ledger Ll, p. 321, shows the Handy Maps as breaking even only in 1963!
 - 36 J. Murray, IV, *John Murray III, 1808–1892: A Brief Memoir* (London, 1919), 23. For Murray's literary enterprises, see further G. Paston, *At John Murray's: Records of a Literary Circle 1843–1892* (London: John Murray, 1932).
 - 37 As an extreme illustration of this conviction, note how in the opening of Letter 4 (Appendix), Müller explained that the map Greece at the Time of the Persian Wars and three sides of its frame are to be engraved, while only its fourth side and the title will be drawn on stone.
 - 38 See, for example, M. S. Pedley, 'The Map Trade in Paris, 1650–1825,' *Imago Mundi* 33 (1981): 33–45: "Copper-plate engraving, always a slow and expensive process, now became a luxury few publishers could afford" (p. 41).
 - 39 See I. Kretschmer et al. (eds.), *Lexikon zur Geschichte der Kartographie von den Anfängen bis zum Ersten Weltkrieg* (Vienna: Deuticke, 1986), s.v. Umdruck; and on corrections in particular, M. Twyman, *Lithography 1800–1850: The Techniques of Drawing on Stone in England and France and Their Application in Works of Topography* (London: Oxford

40 For example, 18 September and 7 October 1860; 19 March 1862.

41 Wallis and Robinson, *Cartographical Innovations* (note 15), 292–94; Seymour, *History of the Ordnance Survey* (note 15), 90.

42 See, for example, Kretschmer et al., *Lexikon zur Geschichte der Kartographie* (note 39), ss.vv. Kupferstich (esp. 424, col. 2), Stieler-Handatlas; Seymour, *History of the Ordnance Survey* (note 15), 85, 242–43. The *O. S. Account* (note 12), of 1875, revised in 1901 and reissued the following year, retained its substantial sections on engraving copper plates and printing from them (193–226). Müller's maps to accompany his unfinished text of Ptolemy were engraved by J. Geisendörfer, 12 rue de l'Abbaye, Paris, and published posthumously as a separate volume by Firmin-Didot in 1901. Likewise, almost all the maps in the great unfinished classical atlases of W. Sieglin and H. Kiepert (in production between the early 1890s and 1914) were engraved: see Talbert, 'Mapping the classical world' (note 3), 11–15, 33–35.

ITINÉRAIRE.

DISTANCES
marquées
DANS LA TABLE.DISTANCES
mesurées
PAR M. LAFITE.

Milles plus minus.

Milles plus ou moins.

Milles rom.

Ceciliana (al. Cæciliana). Ruines sur l'Euphrate...
 Bethammali (al. Bethammari). Ruines sur l'Euphrate...
 Serre (al. Serre). Seruk...
 Apammari. Ruines sur l'Euphrate...
 Eraciza (al. Eragiza). Rajik...
 Barbalisso. Belez...
 Attas (al. Atthas, sive Alhis). Ruines d'Atthas...

XVI

16

16

XIII

14

14

XIII

13

13

VIII

8

8

XVIII

18

18

XVI

16

16

XII

12

12

A. Hierapoli Cecilianam (al. Cæcilianam). De
 Bambych aux ruines sur l'Euphrate...

XXIII

24

24

B. Hierapoli Eracizam. De Bambych à Rajik...

XXV

25

35

CLXXIII.

Bathna Andaradum. De Aedeneh à Ain el Hye.

"

"

179

Bertera (al. Dersera). Ruines...

XVIII

18

28

Cahi (al. Chalcis). Kinesrin ou vieux Alep...

XX

20

33

Teurneuso (sive Thelmenisso). Ruines...

XX

20

20

Apamia (al. Apamea). Kalaat el Medik...

XXIX

28

28

Orentem fl. Rts. Oronte ou el Asi...

XII

12

12

Raphanis. Rafaniat...

XXI

21

21

Jammura. Ruines sur un torrent...

"

"

25

Andarado (al. Antarado). Ain el Hye...

XII

12

12

CLXXIV.

Apamia adversus Nicephorium Euphratis. De
 Calaat el Medik à Racca el Wacith...

"

"

230

Theleda. Zeiun el Asonad...

XLVIII

48

48

Occaraba. A l'E. de Kasrel Gadda...

XXVIII

28

28

Centum putea (al. Centum putei). Près Ain Ghor.

XXVII

27

17

Palmyra. Tadmor ou Palmyre, ruines...

"

"

16

Haræ. Jareka ou Reka...

XVIII

19

19

Oruba (al. Oriza). Subash ou Sokhad...

XXII

22

22

Challe. Il Coum...

XXII

22

22

Risapa (al. Resapha). El Rissafa...

XX

20

27

Sure. El Sour...

XXI

21

21

Finis exercitus Syriacæ et conmerlium Barbarorum

II

2

2

(fort. addend. adversus Nicephorium Euphratis).

Racca el Wacith, en face de Racca...

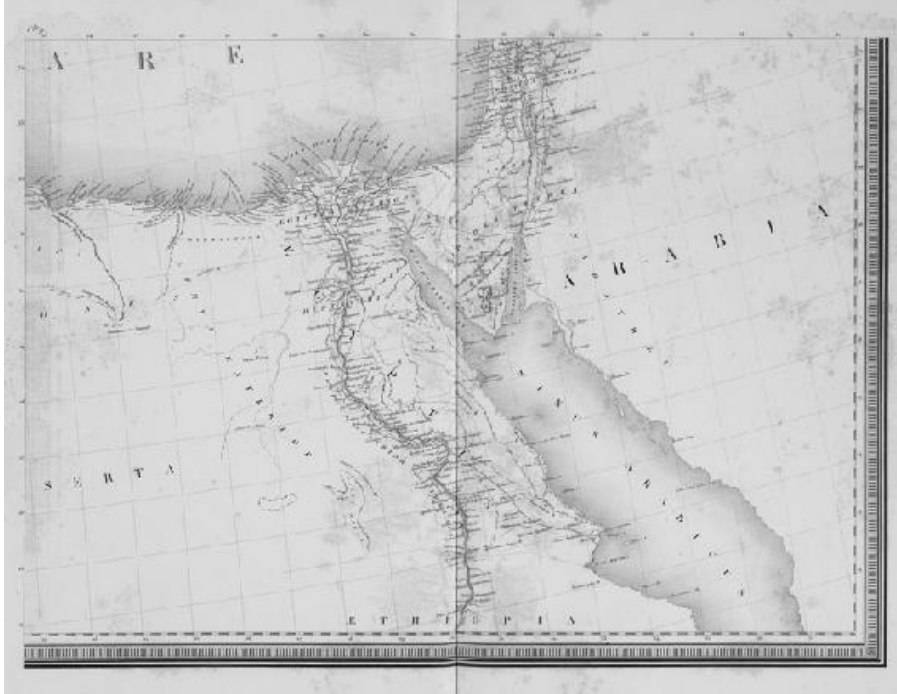
VIII

8

8







4

A Forgotten Masterpiece of

Cartography for Roman Historians:
Pierre Lapie's *Orbis Romanus ad
Illustranda Itineraria* (1845) in H. M.
Schellenberg, V. E. Hirschmann, Andreas
Kriekhaus, eds., *A Roman Miscellany:
Essays in Honour of Anthony R. Birley
on His Seventieth Birthday* (Gdańsk:
Gdańsk University, 2008, pp. 149–56 and
maps)

All of Tony Birley's Roman emperors—Hadrian, Marcus Aurelius, Septimius Severus—were great travelers, and it is abundantly obvious from his writing that he delights in tracing their movements. In each of the three biographies, the Geographical Index is an invaluable aid to the reader, therefore. Not surprisingly, by far the longest Geographical Index is in *Hadrian: The Restless Emperor* (1997), extending almost ten pages from Abae—"little Abae in Phocis" (186)—to the Zilchi.¹ For modern scholars to gain the appropriate geographical perspective, maps are naturally essential; but it is notorious that adequate provision of them to cover the vast span of the Roman empire in all its complexity has always been a source of special difficulty.

How poignant it is, therefore, to become aware of a remarkable set of nine maps, all uncolored, which furnish a unique tool of clear potential value that has never been realized because of persistent neglect. These nine comprise a modern representation of the Roman world from the Antonine Wall in Scotland to Hierasycaminos on the border between Egypt and Nubia² at a uniform scale of approximately 1:3,400,000, on which are traced out in detail the 'routes' appearing on the Peutinger Map and listed in the Antonine Itinerary (ItAnt) and Bordeaux/Jerusalem Itinerary (ItBurd). Even *mutationes* (the least notable stopping-points) recorded by ItBurd are marked! This set of maps was produced as part of a two-volume project commissioned by the

extraordinary aristocrat Agricola Fortia d'Urban (1756–1843),³ but only published posthumously in 1845 at his heir's expense by the Imprimerie Royale, Paris: *Recueil des Itinéraires Anciens comprenant l'Itinéraire d'Antonin, la Table de Peutinger et un choix des périples grecs, avec dix cartes dressées par M. le Colonel Lapie*. A quarto 'text' volume comprises lists (in four columns) of the 'routes' in each of these sources in turn, place by place, appending the modern equivalent name where possible, and stating the distance figure for each stretch as it appears in Roman numerals in the source, together with the arabic-numeral equivalent, as well as the actual distance on the ground in Roman miles (arabic figures) as calculated by Lapie (Figure 4.1).⁴ The Peutinger Map section (pp. 197–320) takes Rome as its starting-point, and comprises 235 numbered routes; it is followed, moreover, by an alphabetical listing of those names to be found on the Map which are detached from its route network.

The *Préface* to the text volume—signed by Emmanuel Miller (1812–1886)—states (p. I) that Lapie's maps “devaient être mises en rapport avec le texte, et représenter toutes les positions, toutes les

Figure 4.1 Sample page of the 'text' volume *Recueil des Itinéraires Anciens* (1845)

localités, toutes les dénominations géographiques contenues dans l'Itinéraire d'Antonin, dans la Table de Peutinger et dans les Périples grecs.” Miller elaborates further (p. XVIII):

L'atlas joint à cette édition se compose de neuf feuilles, qui peuvent être réunies en une seule, représentant tout l'empire romain, avec l'indication de toutes les dénominations géographiques comprises dans cette collection des itinéraires. Une dixième feuille est spécialement destinée à Marcien d'Héraclée et à Isidore de Charax; elle a déjà paru à la suite de mon Supplément des Petits Géographes.⁵

Because of their larger size, Lapie's maps were issued in their own folio volume, and the nine do indeed form a 3 × 3 set (numbered 1–9 in horizontal sequence) that can readily be assembled to form one piece (Figures 4.2–4.11).⁶ Each map is a bi-folio sheet with a single vertical fold, printed on one side only, with no overlap of coverage, and with a conspicuous border drawn to mark the edges of the set. Map coverage is as much as 51.5 cm wide × 37.5 on a sheet. Assembled, the nine sheets span approximately 150 cm wide by 109, within which some space is reserved for insets, explanatory data, etc. The prime meridian for the graticule runs through Paris. Rendering of elevation is limited, but mountain ranges are shown by hachuring. Only ancient names are marked, very legibly engraved however tiny they may be.⁷ It is striking that an

attempt is made—in accordance with the listing mentioned above—to mark even names and notices on the Peutinger Map that are detached from its route network.

Top left on sheet 1 appears the heading:

ORBIS ROMANUS AD ILLUSTRANDA ITINERARIA ANTONINI
BURDIGALENSE TABULAM PEUTINGERIANAM PERIPLOS ITINERARIA
MARITIMA DELINEATUS A P. LAPIE GEOGRAPHO IN COMITATU REGIO
MILITARI CHILIARCHA IN ADMINISTRAT RER BELLIC COLL
TOPOGRAPH PRAEFECTO LUTETIAE A M DCCC XXXIII,

and, in tiny letters underneath, “Flahaut sculpt.”⁸ At the top of sheet 3, scalebars for the main map are presented in as many as eight different units: Miliaria Romana; Leuca Gallicae; Stadia quorum 700 intra unius Gradus spatium continentur; Stadia Olympica; Parasangae Persicae; Schoeni Aegyptiaci; Milliaria (*sic*) Judaica. No scale figure is stated for the map (nor for any of the insets), but it is in fact approximately 1:3,400,000. The top right corner of sheet 3 is occupied by a large inset “URBS cum adjacentibus regionibus” with a scalebar in Roman miles and no graticule; this inset’s scale is approximately 1:1,000,000. Immediately below is a tiny inset, without title or scalebar, that covers Atella-Cumae-Aenaria ins.-Neapolis; its scale is approximately 1:800,000. On sheet 6 the width of the main map is slightly reduced to accommodate a ‘bleed’ towards the bottom right, 2.6 cm in width, which extends the coverage to Ctesiphon and Babylon, as well as to Vologesia. Sheet 7 only continues coverage of the main map at its very top (as far south as Autolole in Africa). Otherwise it accommodates a substantial reduced-scale map⁹ (with graticule) which ranges from Amastris to the mouths of the Ganges; the scale is approximately 1:11,000,000.

At bottom right on sheet 8 there appears the key to the eight styles in which route linework is drawn throughout:

Itinerarium Antonini; Burdigalense; Tabula Peutingeriana

Itin Ant; Tab. Peuting.

Itin. Antonini

Tabula Peutingeriana

Itin Burdigal et Anton

Itin Burdigalense

Itin Burdigal; Tab Peuting

Viae Romanae, de quibus silent scriptores veteres.¹⁰

Inevitably, the eight variants are not all easy to differentiate, because the linework is thin and its presentation in color impractical (even so, purchasers

could add color themselves). A further challenge to the user is the fact that in some regions—Italy and Crete, to name but two—the quantity of data to be accommodated pushes both the chosen scale and the engraver’s skill to their limits. In addition naturally, as with any map, there is scope for disagreement about rendering of landscape, placement of names and routes, and so forth.¹¹ As always, too, new findings created constant pressure for revision. Indeed the *Préface* explains that revision was undertaken for North Africa and Asia Minor even before the maps were issued (meantime sheet 1 at least, dated 1834, had already been produced).

Such concern to keep up-to-date only underlines the favorable reputation enjoyed by the experienced cartographer, Col. Pierre Lapie (1777–1850),¹² not to mention that of the classical scholars led by Emmanuel Miller who supplied the ancient data. In retrospect, we may consider them all unduly modest about the ambitious and pathbreaking character of their collaborative achievement. The standard edition of the itineraries in the 1830s, by Peter Wesseling,¹³ was a century old, and it neither referred to maps nor provided any. As to the Peutinger Map, only one complete commentary had achieved publication, by Mathias Peter Katancsich (1750–1825).¹⁴ He, too, creates routes (but omits to number them) comparable to the 235 organized by Miller. He also attempts to determine the modern equivalent name and location of places marked by the Map, demonstrating cartographic awareness for the purpose. But he provides no maps beyond an engraving of the Peutinger Map itself, and he reflects eighteenth-century knowledge at best, because his work, although completed by 1803, was not published for a further twenty years. Hence Lapie’s production of a large, modern representation of the Roman world on which the Peutinger Map’s routes, as well as those of the Antonine Itinerary and Bordeaux Itinerary, are all traced in detail and integrated is an extraordinary advance. None of this data had been mapped out thus before, nor has a map been produced since which features it all.

Reference is duly made to Lapie’s map volume by Carl Müller—for many years a Paris resident—in his *Geographi Graeci Minores* especially.¹⁵ Further use of it by him would no doubt have been evident too, had he ever brought to publication the projected third volume of this work, or his edition of the Peutinger Map which supposedly was close to completion by the early 1870s.¹⁶ As it is, studies of the Peutinger Map as well as of the Antonine and Bordeaux Itineraries have all but ignored Lapie’s unique contribution. The edition of the itineraries published by Gustav Parthey and Moritz Pinder in 1848¹⁷ to replace those of Wesseling and Miller does refer in its Index to modern equivalent

names for ancient places proposed by Lapie, and it also offers its own lithographed map drawn by Parthey with a single inset (“Viae ex Urbe exeuntes” at 1:840,000). The 1:11,000,000 scale for the main map, however, is so small that the less notable stopping-points cannot be shown. The few stretches of route traversed only in ItBurd are identified as such, but not the routes covered by both ItBurd and ItAnt, nor most routes which require an open-water crossing. Printing in one color is a welcome enhancement, but it might have proved more useful to employ this blue to highlight route linework rather than shorelines and the course of the Tiber.

At the end of his long *Realencyclopädie* entry ‘Itinerarien’ published in 1916,¹⁸ Wilhelm Kubitschek mentions Parthey’s map and those of Lapie only to dismiss all of them brusquely as unusable:

Die Route von ItBurd hat Parthey in seine Übersichtskarte zum ItAnt mit hineingezeichnet, aber in so unglücklicher Technik, dass sie unverwendbar bleiben musste. Die Karte von Lapie ist aus demselben Grunde, eben durch dieselbe Art von Verquickung mit dem ItAnt unbrauchbar.

More damaging for the long term has been the absence of any mention of Lapie’s maps in the 1929 Teubner edition of the itineraries by Otto Cuntz, which remains standard.¹⁹ The map accompanying this edition, drawn by Cuntz himself, is at a somewhat larger scale (1:10,000,000) than Parthey’s and adds some open-water routes, but otherwise amounts to no more than an inferior version of his. Cuntz does not employ color, dispenses with Parthey’s inset altogether, and omits most rivers along with the many names of peoples and regions.

Predictably enough, even the most intensive recent analyses of the itineraries make no reference at all to Lapie.²⁰ Nor does Bernd Löhberg, the first scholar since Lapie to map the routes of the Antonine Itinerary (only) on a modern representation of the Roman empire.²¹ Löhberg takes maps from the *Barrington Atlas* (2000) as his base, reproduces them in full color, and highlights the relevant routes most conspicuously in red.²² The result—published in 2006—underscores his creative ability to harness recent developments in digital technology. Even so, users might wish that he would dare to advance further by issuing an electronic version too, where the individual printed pages of maps were mosaiced together, and at one scale. Meantime, constant recourse to the *Strassen-und Blattübersicht*²³ is required in order to follow longer routes through 152 maps from the *Barrington Atlas* presented on 140 pages, with many insets, and frequent shifts of scale between 1:500,000 and 1:1,000,000. No map extends beyond a single page, with approximately 16.5 cm wide × 25.2 the maximum frame.

In the case of the Peutinger Map, Ernest Desjardins attempted to replace Katancsich's commentary from 1869, but only brought his coverage of Gaul and Italy to publication in fourteen fascicles,²⁴ the last two of them issued in 1874. Desjardins places no reliance upon Lapie, but partially supersedes his work by providing three impressive modern color maps of his own in the last two fascicles, on which the routes in Gaul and Italy are traced.²⁵

To date, the only other editor of the Peutinger Map has been Conrad Miller, whose coverage in the single volume *Itineraria Romana* (Stuttgart, 1916) is complete. Like Desjardins, Miller offers his own modern base maps, indeed more than 300 of them, but they are the most minimal uncolored sketches at varying scales (often unstated), dispersed through his volume.²⁶ Modern toponyms are written in a cursive script very resistant to decipherment by today's reader. Above all, there is no comprehensive presentation at a uniform scale, nor even a reference to Lapie's maps except for a single bibliographic listing in small print (p. LIII). The only other reference that Miller makes to the work sponsored by Fortia is limited to the correction of some misunderstanding that its scope included a revised presentation of the Peutinger Map itself (p. XXV).

Miller was undoubtedly aware of Lapie's maps, therefore, and of the fact that they provided a valuable conspectus of the Peutinger Map's scope and detail from a modern viewpoint. But Miller chose not to draw attention to this contribution, even though his own edition failed to offer the equivalent. This choice on his part—guileless though it may have been—has had an unfortunate effect in the long term. For almost a century now, Miller's edition of the Peutinger Map has generally been assumed to encapsulate and supersede all previous scholarship. Earlier work has more and more been ignored in consequence, including Lapie's remarkable set of maps.

The way forward today, as Löhberg has demonstrated, lies with the computer and digital technology. These now provide the means to create a modern representation of the Roman world at a uniform scale, and to mark on it in layers all the route stretches recorded by the Peutinger Map, Antonine Itinerary and Bordeaux Itinerary. The scale can be instantly adjusted up or down. The layers can be integrated, manipulated and superimposed on one another with a clarity and readiness that Lapie strove for, but could not attain. This is the versatile tool that is currently being prepared in connection with my own forthcoming presentation of the Peutinger Map.

Notes

- 1 = Zichoi, Map 84 E4 in R. J. A. Talbert (ed.), *Barrington Atlas of the Greek and Roman World* (Princeton and Oxford, 2000).
- 2 BATlas 9 C5 to 81 C2.
- 3 M. Michaud (ed.), *Biographie Universelle*, vol. 14 (Paris, 1856), 429–32.
- 4 This text volume is accessible online at <http://gallica.bnf.fr/>
- 5 The tenth (unnumbered) map is the same size as the other nine, but otherwise a quite separate and elaborate item entitled “TABULA exhibens loca a MARCIANO HERACLEOTA ISIDOROQue CHARACENO memo-rata,” with six insets. As Miller indicates, it is a revision of the map which he had already published to accompany his edition (Paris, 1839) of the Greek geographical writers named and others; see further the *Introduction générale* to D. Marcotte, *Géographes Grecs*, vol. 1 (Paris, 2000) (Budé series), CLX and n. 310.
- 6 Multiple thanks to Harvard University: David A. Cobb (Harvard Map Collection) arranged for the set of maps held by Andover Theological Library (Divinity School) to be scanned by the Digital Imaging Graphics Department (Widener Library). This set has suffered some foxing. I am grateful to Jeffrey A. Becker (Ancient World Mapping Center, UNC, Chapel Hill) for assembling it and supervising a trial printout; inevitably, a perfect fit cannot be achieved at every point.
- 7 On the continuing preference for engraved maps, with all their associated labor and expense, long after lithography had become demonstrably cheaper and more efficient during the first quarter of the nineteenth century, see R. J. A. Talbert, ‘Carl Müller (1813–1894), S. Jacobs, and the making of classical maps in Paris for John Murray,’ *Imago Mundi* 46 (1994): 128–50, esp. 144.
- 8 In J. French (1–2) and V. Scott (3–4) (eds.), *Tooley’s Dictionary of Mapmakers*, 4 vols, revised ed. (Riverside, CT, 1999–2004), the entries s.v. Flahaut reveal that two individuals divulging no more than this single name engraved many of Lapie’s maps between the 1820s and 1840s; at least one (“Mlle”) was female.
- 9 TABULA ASIAE INTERIORIS AD EXPLANATIONEM TABULAE PEUTINGERIANAE MARCIANI HERACLEOTAE ISIDORI CHARACENI. Scalebars for only three units are offered here: Milliaria (*sic*) Romana; Stadia; Parasangae Persicae.
- 10 Despite the potential for confusion, no reference is made to the fact that this style of linework is also used to trace the crossings of open water that occur in ItAnt and ItBurd, together with some others. How and why only these latter crossings were chosen for inclusion eludes me. In particular, the *Itinerarium Maritimum* is not followed systematically. To be sure, inclusion of its coastal routes would often create acute difficulties of presentation where there is already no practical alternative to placing the names of many coastal settlements in open water.
- 11 Tony would be the first to query the naming of the Antonine Wall as *Vallum Severi*!
- 12 M. Michaud (ed.), *Biographie Universelle*, vol. 23 (Paris, n.d.), 228–29 (by A. Maury). Lapie, it should be appreciated, was no classical scholar, and made historical maps strictly on the basis of data supplied to him: see W. Goffart, *Historical Atlases: The First Three Hundred*

- Years, 1570–1870 (Chicago, 2003), 15, 386.
- 13 P. Wesseling, *Vetera Romanorum Itineraria, sive Antonini Augusti Itinerarium, Itinerarium Hierosolymitanum, et Hieroclis Grammatici Synecdemus* (Amsterdam, 1735).
 - 14 M. P. Katancsich, *Orbis Antiquus ex Tabula Itineraria quae Theodosii Imp et Peutingeri Audit ad systema geographiae redactus et commentario illustratus*, (2 vols, Buda, 1824–25).
 - 15 2 vols, Paris, 1855 and 1861; see further Talbert, op. cit. in n. 7 above.
 - 16 So he claims himself with reference to Map 29 Asia Minor in the ‘Sources and Authorities for the Maps’ section of W. Smith and G. Grove (eds.), *Atlas of Ancient Geography Biblical and Classical...* (London, 1872–74).
 - 17 G. Parthey and M. Pinder, *Itinerarium Antonini Augusti et Hierosolymitanum* (Berlin, 1848).
 - 18 RE 9. 2308–63 at 2363. Attention is still drawn to Lapie’s set of maps, however, in F. Cabrol and H. Leclercq (eds.), *Dictionnaire d’archéologie chrétienne et de liturgie*, vol. 7 (Paris, 1927), s.v. Itinéraires, col. 1861 [by Leclercq].
 - 19 O. Cuntz, *Itineraria Romana I: Itineraria Antonini Augusti et Burdigalense* (Leipzig, 1929). Cuntz’s text of ItBurd (only) is revised by P. Geyer, ‘Itinerarium Burdigalense,’ 1–26 in *Itineraria et Alia Geographica* (Corpus Christianorum Series Latina 175), Turnholt, 1965.
 - 20 Especially M. Calzolari, *Introduzione allo Studio della Rete Stradale dell’ Italia Romana: L’ Itinerarium Antonini*, *Atti della Accademia Nazionale dei Lincei* (Classe di Scienze Morali, Storiche e Filologiche) *Memorie* Ser. IX vol. VII fasc. 4 (1996): 369–520; and id, ‘Ricerche sugli itinerari romani. L’ Itinerarium Burdigalense,’ 127–89 in *Studi in Onore di Nereo Alfieri* (Accademia delle Scienze di Ferrara, 1997). In addition, for a variety of perspectives without mention of Lapie, compare B. Salway, ‘The perception and description of space in Roman itineraries,’ 181–209 in M. Rathmann (ed.), *Wahrnehmung und Erfassung geographischer Räume in der Antike* (Mainz, 2007), with R. J. A. Talbert, ‘Author, audience and the Roman empire in the Antonine Itinerary,’ 264–79 in R. Haensch and J. Heinrichs (eds.), *Herrschen und Verwalten: Der Alltag der römischen Administration in der Hohen Kaiserzeit* (Berlin, 2007).
 - 21 B. Löhberg, *Das ‘Itinerarium provinciarum Antonini Augusti,’ ein kaiserzeitliches Strassenverzeichnis des Römischen Reiches: Überlieferung, Strecken, Kommentare, Karten* (2 vols, Berlin, 2006).
 - 22 However, the opportunity to show where ItAnt routes duplicate one another is not taken.
 - 23 A loose endpaper at 1:15,000,000. A duplicate showing only *Die Strassen* is provided too.
 - 24 E. Desjardins, *La Table de Peutinger, d’après l’original conservé à Vienne...* (Paris).
 - 25 For details, see R. Talbert, ‘Cartography and taste in Peutinger’s Roman map,’ 113–41 in id. and K. Brodersen (eds.), *Space in the Roman World: Its Perception and Presentation* (Münster, 2004) at 133.
 - 26 A set of twelve such sketches is more conveniently brought together, however, in Miller’s revised *Die Peutingersche Tafel* (Stuttgart, 1916). This work offers a brief overview of *Itineraria Romana* together with a pull-out half-size lithograph of the Peutinger Map; for details, see Talbert, op. cit. in previous note, 134–35.

Figure 4.2 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 1

Figure 4.3 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 2

Figure 4.4 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 3

Figure 4.5 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 4

Figure 4.6 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 5

Figure 4.7 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 6

Figure 4.8 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 7

Figure 4.9 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 8

Figure 4.10 Lapie, *Orbis Romanus ad Illustranda Itineraria*, sheet 9

Figure 4.11 Lapie, *Orbis Romanus ad Illustranda Itineraria*, assemblage of sheets 1×9

Heinrich Kiepert, *Formae Orbis Antiqui* (1894–1914): *Introduction to the 1996 Reissue* (Rome: Edizioni Quasar, 1996, pp. V–VIII)

“Ohne seine Karten könnten wir alle nicht arbeiten”, wrote Wilamowitz of Heinrich Kiepert in his *Geschichte der Philologie*.¹ Ironically, however, the volume entitled *Formae Orbis Antiqui* which Kiepert planned during the 1890s as the climax of his long life’s work has remained not only unfinished but also, it would seem, very little known. This reprint of it—the first in over eighty years after the publication of the last map to appear—can re-introduce an atlas which has yet to be superseded in fact, despite the immense strides that have since been made in cartography and classical scholarship.

For all the esteem in which contemporaries rightly held him, in the twentieth century Kiepert has mostly been forgotten. Today most residents of his native Berlin would associate his name instead with the successful bookselling and publishing concern established and maintained for several generations now by other members of the family. The fullest account of his life and assessment of his work remain the obituaries written following his death on 21 April 1899. Best is the two-part piece by his friend J. F. M. Partsch, Professor of Geography at Breslau.²

In addition, in 1873 Kiepert wrote an autobiographical sketch which was published in *Globus* just after his death.³ Quotation of the first page can at once illuminate his early years and decipher the difficult longhand reproduced—for this page only—by the periodical. As it explains, he was born in Berlin on 31 July 1818, and was educated there: at the University it was his good fortune to be taught by the classicists A. Boeckh and E. Gerhard.⁴ His flair for geography and cartography went back to his childhood:

I was born on July 31, 1818, in Berlin, the older of two sons of a merchant with modest income. Frequent travels with my Silesian parents to relatives in the

Riesen mountains and Bohemia awakened my interest in the natural world from earliest childhood. Following some prolonged spells in health spas (first at the age of five and especially later at nine), my poorly rendered drawings of plants grabbed the attention of my elders. Thereafter these drawings were interpreted as infallible signs of my professional future. Many older and esteemed friends supported my interest in geography (especially in the spirit of C. Ritter), my favorite subject in school. These family friends included Leopold Ranke, the famous historian, and my uncle Hoffmann, at that time head of the orphanage and seminary in Bunzlau (Silesia). He was an excellent teacher, still today fondly remembered by many of his students. Hoffmann's influence, transmitted in his textbooks—imbued as they were with Schleiermacher's spirit—lasted well beyond his death. Only Mühler's ministry put an end to it. During my school days (1828–1836) at the Joachimsthal Gymnasium in Berlin I also passionately pursued philology (the only other subject which came easily to me), especially in more advanced classes with the splendid director, the recently deceased philologist Meineke, to whom I owe so much, along with A. Boeckh and E. Gerhard at the university. Otherwise all my free time was taken up by the study of special topics in history, most of all antiquity from its sources, along with geography in great detail (a subject increasingly neglected in Gymnasium teaching), accompanied of course by painstaking practice in drawing maps and flora. At that time it was essential for me to do this, since the production of maps in Germany was still very defective, while expensive English and French maps were beyond the means of young students. Copies of such English and French creations (these days replaced by much superior versions) served as the necessary preparation for my own studies.⁵

As a student in Berlin Kiepert was influenced most by C. Ritter, who had held a Chair of Geography there since 1825—the first, and for a long time the only, established university post in the discipline in Germany.⁶ After trying with only limited success to revive a Geographical Institute at Weimar for seven difficult years from 1845, Kiepert returned to Berlin to be director of cartography for the publisher Dietrich Reimer. He remained associated with this firm for the rest of his life. In 1859 he was made Professor Extraordinarius at the University, but not until 1874 was he made Ordinarius to fill Ritter's Chair, which had remained vacant since the latter's death in 1859. This recognition reflected the long-delayed fulfillment of Ritter's wish to see the study of geography widely adopted in German universities. Even by 1870 the discipline was established only at Berlin, Breslau and Göttingen, but it spread rapidly thereafter.⁷ However as early as 1853, at a precocious age for the distinction, Kiepert had been made a member of the Royal Prussian Academy of Sciences (in Berlin) on Ritter's proposal.⁸

In Ritter's footsteps Kiepert pursued geography principally for the contribution it could make to history—ancient history in particular—rather than as a discipline in its own right. This was the accepted approach to the subject in the mid-nineteenth century, and of course there was a great deal to be done, as Kiepert's prolific output amply demonstrates. The production of maps and atlases was his main concern, although his writings were also important—in particular the *Lehrbuch der Alten Geographie* (1878), which at once became a standard work.⁹ His scholarship on any topic or area was marked by its impressive grasp of all relevant material, both ancient and modern. This mastery is reflected in the impressions of E. G. Sihler (later Professor of Latin at New York University), who heard lectures by him on ancient Europe in 1873:

[He] always brought in huge charts, superb ones, literally his own handiwork. It was a rare privilege to listen to the foremost master in that field. His lectures evidenced absolute familiarity with all the ancient authors illuminating his themes, even oriental ones. The catholicity, the wonderful sweep, of Kiepert's erudition made a great impression on me.¹⁰

A bibliography of this “new d’Anville” (as he came to be hailed after his eighteenth-century forerunner), including all his maps, atlases, globes, books and other writings, runs to hundreds of entries.¹¹ Though he mapped many different regions, from early in his career he devoted himself particularly to the cartography of Asia Minor, where an immense amount of pioneering work was called for. These efforts earned him the further nickname of “the Turkish General Staff”¹²—underlining the obvious point that German interest in that part of the world was by no means merely academic. Kiepert's maps of the region were regarded as definitive, so much so that Sir William Ramsay could expostulate in 1905:

The published maps [of Asia Minor] are extremely inaccurate, but it seems impossible in England to find any draftsman who will depart from the published maps; whatever you give him in the way of material, however carefully you draw a plan of the country which you have traversed, he finally prints only a copy from Kiepert, with the new names which you have discovered adapted, more or less badly, to the accepted misrepresentations of the country.¹³

In view of Kiepert's cartographic expertise, governments called for his opinion on a number of occasions. One case has a special North American interest. In 1872 the Kaiser, on Bismarck's nomination, appointed him to the three-man commission for arbitrating the San Juan water boundary dispute—

alongside F. Grimm, Vice-President of the Supreme Court, Berlin, and L. Goldschmidt, Councillor of the Supreme Court of Commerce of the German Empire. This issue arose because in making the Oregon Treaty of 1846 neither Great Britain nor the United States had taken the trouble to establish the geography of the area between the North American mainland and Vancouver Island, or even to incorporate a map into their agreement. As a result, conflicting claims flared up into the “Pig War” of 1859, and the two nations eventually agreed to arbitration by the Treaty of Washington (1871). Professional qualifications aside, Kiepert seems to have been chosen for his familiarity with English. The commission’s recommendation by a two-to-one majority (Goldschmidt dissenting) was that the United States claim be upheld. It would be pleasant to think that Kiepert (who travelled a great deal) made an “on-site” visit, cruising the Haro Strait and visiting Victoria and Port Townsend, but in fact the commission never left Germany.¹⁴

Kiepert encouraged Reimer’s production of atlases for schools, and was responsible for a considerable number himself.¹⁵ Although not his first school atlas of the ancient world, nor his only one, the *Atlas Antiquus* (with twelve double spread maps) became the most famous and ran to twelve editions. It was first issued in 1859. The cover of the final, posthumous edition of 1902 proudly proclaims bestseller status with the words “Drittes Hundert Tausend” displayed in large print across its cover. This atlas also appeared in at least five other languages.

Kiepert’s Preface to *Formae*, written in 1894, incorporates a review of his own previous classical atlases, and his contributions to those of others. In the course of this he confesses that because his aim of producing a larger classical atlas had been so long delayed, he had included in the *Atlas Antiquus* much more information than was appropriate for school use. With the appearance of *Formae*, he now promised to remove such excess material—though this was never done.

Prior to *Formae*, his most important set of maps of the classical world were the thirty or so drawn to accompany his friend T. Mommsen’s *Corpus Inscriptionum Latinarum*: these appeared between 1869 and 1892.¹⁶ Of course their scales and character were governed by the needs of the epigraphic corpus. *Formae*, on the other hand, was designed with a much wider scope, and was planned as Kiepert’s fulfillment of the patent need for a definitive classical atlas, which (the Preface claims) he had been concerned to remedy ever since his days as a student. He does acknowledge with respect the achievement represented by the only previous comparable attempt—*An Atlas of Ancient Geography Biblical and Classical*, edited by W. Smith and G. Grove, which was published by John Murray, London, between 1872 and 1874. Most of its classical maps, gazetteers and accompanying text were compiled by C. Müller

in Paris.¹⁷ But they had inevitably been overtaken by the expansion of research in general during the intervening quarter-century, and by the progress of the *Corpus Inscriptionum Latinarum* in particular. Moreover Kiepert (who always had a keen commercial sense) understandably found fault with this atlas for being too expensive and thus not widely available.

The price of *Formae*, by contrast, was set remarkably low. The immediate purpose was no doubt to undercut W. Sieglin's *Atlas Antiquus: Atlas zur Geschichte des Altertums*, which Justus Perthes of Gotha had begun to issue in 1893.¹⁸ Kiepert presumably saw this as a rival work, even though (as the title indicates) its main focus was on historical themes rather than topography, and there was no accompanying text.¹⁹

Indeed it may well have been the appearance of Sieglin's first maps that finally spurred Kiepert—already into his seventies!—to prevaricate no longer over preparation of the atlas he had so long dreamed of as the culmination of his career. It was planned on a truly expansive scale for a man of that advanced age. There would be a total of 36 maps, to appear in six Parts each containing six maps, “with critical text giving the authorities consulted added to each map”. It is a remarkable sign both of Kiepert's anglophilia and of his commercial sense that this very substantial text would be made available in English as well as German. The first Part—consisting of maps IX, XII, XV, XVII, XXVI, XXVII—duly reflected the plan, although it is important to appreciate that in the English text—presumably his own translation—Kiepert omits sections of the German, sometimes without even drawing attention to the fact.²⁰

If the appearance of the first Part of *Formae* had been intended not least to discourage Sieglin, the strategy clearly succeeded because he issued no more of his *Atlas Antiquus* after 1895: by this date thirteen of the 34 maps planned for it were still outstanding.²¹ At the same time, however, Kiepert unfortunately did little more to advance *Formae* beyond working on map XIX. His health was gradually failing, and he had other preoccupations, most notably the completion of *Formae Urbis Romae Antiquae*, which he had compiled in collaboration with C. Hülsen (1858–1935) and issued in 1896.²² At the time of his death on 21 April 1899 the first Part was still all that had been published of *Formae Orbis Antiqui*.

In fact H. Kiepert had never expected to see *Formae* to completion, and for that reason had enlisted his loyal son Richard (born in Weimar in 1846) as collaborator from the outset. In so doing he no doubt recalled to mind how much he had likewise helped the aged C. Ritter during the 1850s. Even so, Richard can hardly have anticipated that his father would die with only one-sixth of the work for *Formae* done. Richard had certainly collaborated with him often before—most notably in mapping Asia Minor. But in working for

Dietrich Reimer he had also pursued quite distinct cartographic interests, the two most notable being China and German colonies, in East Africa in particular.²³

Formae moreover was just one of several major commitments which H. Kiepert left outstanding at his death. Richard's selfless decision was to tackle them all, which he proceeded to do with great success. First, the ten maps due for *Corpus Inscriptionum Latinarum* III. Supplementum were finished off in time to permit publication of this volume in 1902: each map carries the attribution "Formam descripsit Henricus Kiepert, supplevit Ricardus Kiepert". Then the 24-sheet series *Karte von Kleinasien* at a scale of 1:400,000 (without accompanying text) was issued between 1902 and 1906.²⁴

Formae represented the most formidable commitment of all, even though admittedly for it, as for the others, there was a mass of earlier relevant work by his father and himself for Richard to draw on.²⁵ He resumed publication as early as 1901 by completing and issuing map XIX. In both this instance and subsequently, however, maps were to come out only singly or in pairs, rather than in Parts of six, and accompanying texts would be limited to German. A much higher, and more realistic price was set too,²⁶ now that any fear of competition from Sieglin had been dispelled.

For the next thirteen years Richard made slow, but fairly steady progress with *Formae*. Maps XX and XXIII came out separately in 1902, XXI and XXII together in 1904. XIII and XIV likewise appeared together in 1906. A further pair (X and XVI) and a single map (VII) came out in 1908. Single maps followed: V and VIII in 1910, VI and XXXV in 1911; also the pair XXXIII and XXXVI in 1911. Last came three single maps, XXXIV in 1912, XXV in 1913, XXIV in 1914.²⁷ But having thus completed one of his father's maps, and made eighteen himself, Richard died in 1915, leaving eleven of the 36 planned maps still outstanding along with the comprehensive gazetteer promised at the outset.

Texts grew short towards the end, and none accompanied XXXV or XXXVI. However the brevity can be partly accounted for by the topics of the maps concerned. As late as 1909 Richard wrote twenty pages (by far the longest text of all) to accompany VIII, "Asia Minor"—an area, as already noted, of special interest to both himself and his father. Overall there is no question that the nineteen maps and seventeen texts published by Richard maintain the high standards set by his father's six of each. Especially for those parts of the classical world that have been mapped little since, *Formae* remains an essential resource and starting-point for future work.

But there was no-one to finish it. Well before his death Heinrich Kiepert had become an isolated, and in some ways reactionary, figure. He had not welcomed the establishment of a new Chair of Physical Geography in Berlin

University, to which F. von Richthofen was appointed in 1886.²⁸ This development was of course a recognition of the fresh direction which the discipline was now taking. Kiepert thus became increasingly distanced from geographers and had no followers among them except his son Richard. Indeed, although he continued to influence archaeologists and ancient historians greatly, he had no “school” there either.²⁹

When Richard in turn died in 1915, there was no continuator of *Formae* to hand. He had not held a university teaching position and thus had no pupils, whilst the extraordinary transmission of cartographic talent from father to son did not extend to a third generation within the Kiepert family. The First World War and the years following it in Germany were anyway not a suitable time to pursue such a project. In addition engraved maps were now antiquated: unfortunately neither of the Kieperths had ever shown special interest in experimenting with the less laborious methods of production which had gradually been refined during the second half of the nineteenth century.³⁰ The mapping of landscape, too, came to be transformed in the post-War era by the use of aviation and aerial photography.³¹

The one recorded initiative to complete *Formae* occurs considerably later, and was in its turn rendered abortive by war. The work was to be carried out by V. Burr (1906–1975), and was first sponsored very appropriately by the Berlin Academy in 1938; soon afterwards the Union Académique Internationale became its partner in the enterprise. Burr made a start on map XI and expected to have it ready by late 1939, but he was then called up for war service which halted all further progress—for good, as it turned out. In 1941 it was reported that “sein Manuskript mitsamt den Kartenskizzen liegt im Panzerschrank der Akademie”, and these materials were presumably still there when the Academy was bombed in 1943.³² Reimer’s premises were likewise gutted by bombing in 1945.³³

The unfinished atlas never seems to have sold well, and not least because of the scarcity of copies (especially ones including *everything* ever issued) it has more and more come to be forgotten. The citation of Kiepert’s *Formae* and Sieglin’s *Atlas Antiquus* as two major classical atlases—both of them incomplete and by then long out of print—by the third edition of J. A. Nairn’s *Classical Hand-List* as late as 1953 is exceptional.³⁴ Meanwhile, however, not until the present decade has there been any attempt to produce an atlas of comparable stature, albeit that this could no longer realistically be the work of a single individual, nor retain such small scales as often seemed adequate last century. Thus while very welcome for its own sake, the present reprint of Kiepert’s magnificent *Formae* also serves to demonstrate how badly a replacement of his fundamental work is needed.³⁵

Notes

- 1 Teubner, Leipzig and Berlin, 1921, 69.
- 2 *Geographische Zeitschrift* 7 (1901): 1–21, 77–94. For Partsch himself (1851–1925), see G. Schwarz in T. W. Freeman (ed.), *Geographers: Biobibliographical Studies*, vol. 10 (London and New York, 1986), 125–33. Note that the key work cited in I. Kretschmer and others (eds.), *Lexikon zur Geschichte der Kartographie von den Anfängen bis zum ersten Weltkrieg* (Wien, 1986) s.v. Kiepert has in fact *not* yet been published: “U. Freitag [and others], *Heinrich und Richard Kiepert—Zwei Berliner Kartographen des 19. Jh.* (Berlin, 1985)”. This is also given a one-page endpaper summary (with a slightly different title) in the Verlag Kiepert KG series *Kartographische Miniaturen*, where it is due to appear as no. 7 at some future date. The main sections, Prof. Freitag kindly informs me, will be a reprint of Partsch’s accounts, and a bibliography of the Kieperths’ work.
- 3 *Globus* 75 (1899): 297–301.
- 4 On the former, see J. Irscher, *Die griechisch-römische Altertumswissenschaft am Übergang vom Klassizismus zum Historismus: Zur 200. Wiederkehr der Geburtstage von I. Bekker und A. Boeckh im Jahre 1985 (Sitzungsberichte der Akademie der Wissenschaften der DDR Gesellschaftswissenschaften, 1986, Nr. 4/G),* esp. 7–11; on the latter, J. E. Sandys, *A History of Classical Scholarship*, vol. 3 (Cambridge, 1908), 217–18.
- 5 “Ich bin [am] 31. Juli 1818 in Berlin geboren, als ältester von zwei Söhnen eines in mittelmässigen Vermögensumständen lebenden Kaufmannes. Öfters wiederholte Reisen mit den aus Schlesien stammenden Eltern zu den Verwandten, namentlich ins Riesengebirge, auch nach Böhmen, weckten schon seit frühester Kindheit den Sinn für Naturbeobachtung, und einige infolge längeren Aufenthaltes in Badeorten (zuerst in meinem fünften und besonders später im neunten Jahre) von mir versuchte, gewiss schwach ausgefallene Planzeichnungen des selbst soeben gesehenen erregten die Aufmerksamkeit älterer Personen und wurden wohl als unverkennbare Fingerzeige auf einen künftigen Lebensberuf gedeutet. Für Geographie, die vom Beginn des Schulunterrichtes an mein Lieblingsfach geworden, mich lebhafter und speciell im Ritterschen Geist zu interessieren, war fürderhin das von mir dankbar anerkannte Streben mehrerer älterer Freunde der Familie, unter denen ich mit vorzüglichem Danke Leopold Ranke’s, des berühmten Historikers, und meines trefflichen Onkels Hoffmann gedenke, damals Direktor des Waisenhauses und Seminars in Bunzlau in Schlesien, eines ausgezeichneten und von zahlreichen Schülern noch heut mit Verehrung genannten Pädagogen, dessen über seinen Tod hinaus durch tüchtige, im Schleiermacherschen Geist gehaltene Unterrichtsbücher fortgesetzter Wirksamkeit erst vom Mühlerschen Ministerium ein Ende gemacht worden ist. Während der Schulzeit—1828–36 auf dem Joachimsthalischen Gymnasiums zu Berlin—wurden zwar, da mir das Lernen in jedem Zweige, namentlich aber in Sprachen leicht fiel, auch die streng philologischen Studien mit Vorliebe verfolgt, besonders in den höheren Classen gefördert durch den trefflichen Direktor, den ausgezeichneten, kürzlich verstorbenen Philologen Meineke, dem ich auch in persönlichem Umgang ebenso viel verdanke, wie später auf der Universität A. Boeckh und E. Gerhard. Daneben aber füllte Specialgeschichte, vorzüglich des Alterthums aus den Quellen, und namentlich—je mehr das Fach selbst im Gymnasialunterricht vernachlässigt war—detaillirtestes Studium der Geographie alle freien Stunden, natürlich verbunden mit eifrigen Übungen in Landkarten-und Planzeichnen. Musste doch in jener Zeit, wo die

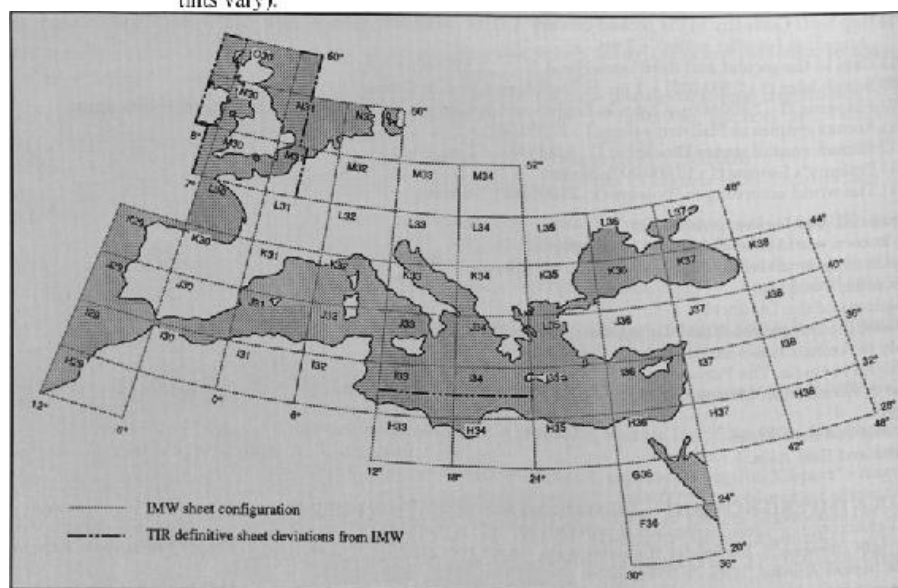
- Kartenproduktion in Deutschland noch sehr im Argen lag, und die kostbaren englischen und französischen Kartenwerke [den Mitteln des jungen Studierenden unzugänglich blieben, Copien solcher Originalarbeiten, die gegenwärtig grossenteils schon wieder durch unvergleichlich bessere ersetzt sind, als notwendige Vorbereitung zum eingehenden Studium dienen]”.
- 6 See M. Linke, ‘Carl Ritter (1779–1859),’ 99–108 in T. W. Freeman (ed.), *Geographers: Biobibliographical Studies*, vol. 5 (London and New York, 1981).
 - 7 For a review of developments in Germany after Ritter, see for example R. E. Dickinson, *The Makers of Modern Geography* (New York, 1969), chap. IV.
 - 8 Membership was particularly fitting for a cartographer in view of the Academy’s longstanding concern with mapping: during the mid-eighteenth century it had enjoyed a monopoly on all map publication and distribution. See in brief I. Kretschmer, *Lexikon zur Geschichte der Kartographie*, vol. 2 (s.v. Preussische Monarchie), 639, and bibliography on 641. Kiepert’s Academy publications are listed in A. Harnack, *Geschichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, vol. 3 (Berlin, 1900), 144–45.
 - 9 An English translation *A Manual of Ancient Geography* (London, 1881) was made, although it arbitrarily omits passages. This is available on microfiche from Scholars Press.
 - 10 *From Maumee to Thames and Tiber: The Life-Story of an American Classical Scholar* (New York, 1930), 68.
 - 11 For an impression, see *Gesamtverzeichnis des deutschsprachigen Schrifttums 1700–1910*, vol. 75, 36–44 and 1911–1965, vol. 68, pp. 69–70. Note, however, that his many contributions to others’ works are by definition largely excluded here.
 - 12 See the important notice by V. Hantzsch in *Allgemeine Deutsche Biographie* 51 (1906): 133–45 at 145.
 - 13 ‘A summer journey in Asia Minor,’ *The British Weekly* 27 July 1905, 377–78, reprinted by W. W. Gasque, *Sir William Ramsay: Archaeologist and New Testament Scholar* (Grand Rapids, 1966), 78–85, 83.
 - 14 Among the many accounts see, for example, J. O. McCabe, *The San Juan Water Boundary Question* (Toronto, 1964). In addition an exhaustive (unpublished) treatment is offered by J. W. Long, Jr., ‘The San Juan Island boundary controversy: A phase of 19th century Anglo-American relations’ (diss. Duke University, 1949); note 438–39 on the choice of Kiepert. The arbitrators’ full recommendations were eventually published (with English translation) by H. Miller (ed.), *Northwest Water Boundary: Report of the Experts Summoned by the German Emperor as Arbitrator under Articles 34–42 of the Treaty of Washington of May 8, 1871. Preliminary to His Award Dated October 21, 1872* (University of Washington Publications in the Social Sciences 13. no. 1, 1942, 1–75).
 - 15 On school atlases generally, see A. Badziag and others, *Schulatlanten in Deutschland und benachbarten Ländern vom 18. Jahrhundert bis 1950: ein bibliographisches Verzeichnis* (München, 1982), esp. ss. vv. Kiepert, Reimer in index.
 - 16 See my listing in ‘Mapping the classical world: Major atlases and map series 1872–1990,’ *Journal of Roman Archaeology* 5 (1992): 5–38 at 34.
 - 17 On this major, but exceptionally elusive figure, who was born and died exactly five years before Kiepert, see further *JRA* 5 (1992): 6, and my subsequent study, ‘Carl Müller (1813–1894), S. Jacobs, and the making of classical maps in Paris for John Murray,’ *Imago Mundi*

- 18 For W. Sieglin (1855–1935), see the obituary notices by H. Philipp, *Petermanns geographische Mitteilungen* 81 (1935): 368–69; H. Treidler, *Bursian JB* 254 (1936): 123–31.
- 19 Assuming the initial prices held, Kiepert's atlas was due to cost 18 Marks, Sieglin's 20. Kiepert's sterling price was only 30 shillings, as opposed to a minimum of 105 shillings for Smith's atlas when it had first appeared.
- 20 At least he does give warning in the rather unexpected case of *Insulae Britannicae* (map XXVI). By contrast the review of his own previous classical atlases and his contributions to those of others is severely abbreviated without warning in the English Preface.
- 21 Sieglin never resumed work on this atlas even after accepting appointment to succeed Kiepert in Berlin and holding that Chair from 1899 to 1914. Four more maps for the atlas, compiled by Sieglin's former pupil Max Kiessling, were published in 1909, but nothing further appeared after these.
- 22 For reduced black-and-white reproductions of the *revised* (1912) edition, see A. P. Frutaz, *Le Piante di Roma* (Rome, 1962) vol. I nos. LIV–LVI (pp. 97–100) and Tavole 114–16.
- 23 For Richard Kiepert's life and work, see the obituary notices by J. F. M. Partsch, *Zeitschrift der Gesellschaft für Erdkunde zu Berlin* (1915): 512–32 (esp. 524–29), and in *Geographische Zeitschrift* 22 (1916): 121–26.
- 24 In addition revisions appeared up to 1916: note ed. 4 of D IV *Adana* in that year.
- 25 For bases especially—as H. Kiepert, too, had done in the first Part (see text for map XXVII, for example).
- 26 Three Marks for each map or pair, rather than for each Part.
- 27 In some instances publication of a map occurred a year after the date appearing on the sheet itself. Publication dates are derived from the superb copy of *Formae* and accompanying materials held by the University of Wisconsin, Madison.
- 28 See A. Kolb, 'Ferdinand Freiherr von Richthofen (1833–1905),' 109–15 in T. W. Freeman (ed.), *Geographers: Biobibliographical Studies*, vol. 7 (London and New York, 1983).
- 29 For Kiepert (and Sieglin) as professors at Berlin University see, from the perspectives of classicists and geographers respectively, W. Arenhövel and C. Schreiber, *Berlin und die Antike: Aufsätze*, vol. 2 (Berlin, 1979), 40, 81; and H. Wagner, 'Die Pflege der Geographie an der Berliner Universität im ersten Jahrhundert ihres Bestehens, 1810–1910,' *Petermanns geographische Mitteilungen* 56 II. (1910) Heft 4: 169–76. Note Wagner's point (p. 172) that of the 26 contributors to Kiepert's *Festschrift* in 1898, only three were geographers. The Frontispiece to this volume, incidentally, reproduces a picture and photograph of him in 1842 and 1898 respectively; for a photograph taken in 1886, see C. Schuchhardt and T. Wiegand, *Der Entdecker von Pergamon Carl Humann: Ein Lebensbild* (ed. 2, Berlin, 1931), 125.
- 30 For a review, see D. Woodward (ed.), *Five Centuries of Map Printing* (Chicago, 1975), chaps. 5 and 6. No doubt it was in the interest of speed that the first eight maps of *Formae* to appear (i.e. IX, XII, XV, XVII, XXVI, XXVII, XIX, XX) were lithographed; but R. Kiepert then reverted to engraving.
- 31 In a brief evaluation of the Kieper's maps of Asia Minor, J. and L. Robert rightly stress that they could only offer accurate coverage of those areas which they had traversed on their journeys: see *La Carie: Histoire et Géographie Historique avec le Recueil des Inscriptions*

- Antiques*, vol. 2 (Paris, 1954), 447–49. On difficulties even then, note J. M. Cook, *The Troad: An Archaeological and Topographical Study* (Oxford, 1973), especially 34, 49, 326. For a lively encounter with H. Kiepert in Asia Minor in 1886 and other anecdotes, see C. Schuchhardt, *Aus Leben und Arbeit* (Berlin, 1944), 118–24.
- 32 See *Jahrbuch der Preussischen Akademie der Wissenschaften* 1939, p. 66; 1940, p. 61; 1941, p. 55 (quoted) and 95; 1942, p. 28; UAI *Compte Rendu* 1939, p. 36. H. Lietzmann, sponsor of the project within the Academy, died in 1942.
- 33 I. Kretschmer, *Lexikon zur Geschichte der Kartographie*, s.v. Reimer.
- 34 Blackwell, Oxford, p. 153. For the place of both atlases in classical studies, note the contemporary review by A. Ruge (“Antike Geographie”) in W. Kroll (ed.), *Die Altertumswissenschaft im letzten Vierteljahrhundert. Eine Übersicht über ihre Entwicklung in der Zeit von 1875–1900 im Verein mit mehreren Fachgenossen* (Leipzig, 1905), esp. 382–83; and by K. J. Neumann, *Entwicklung und Aufgaben der alten Geschichte* (Strassburg, 1910), 70–71, together with my article cited in note 16 above.
- 35 What H. Philipp wrote in his obituary of Sieglin remains true more than sixty years later: “Leider haben die beiden Atlanten, der von Sieglin wie der von Kiepert, das Unglück, unvollendet geblieben zu sein. Es ist das ein ungeheurer Verlust für die Wissenschaft, nicht nur Deutschlands, denn die historischen Karten des Altertums, die hier bei uns erarbeitet wurden, hatten nirgends auf der Welt Gegenstücke” (*Petermanns Geographische Mitteilungen* 81 (1935): 368).

For help in the preparation of this Introduction I should particularly like to thank the late S.C. Bakhuizen, W.M. Calder III, H.I. MacAdam, P. Marzolff (who transcribed the page of *Globus*), H. Meyer, G.S. Shrimpton, the Library of the University of Wisconsin, Madison, and the Editor of the *JRA*, who has permitted me to reproduce some of my own material from vol. 5, 1992.

1899	Gallia (1:2,500,000). 3 tints
1900	Britannia [scale not given, approx. 21 miles to the inch]. 4 tints
1900	Hispania (1:2,500,000). 4 tints
1900	Germania. Two maps: (top) "Germania, Rhaetia, Noricum" (1:3,700,000); (bottom) "Thracia, Moesia, Illyria, Pannonia, Dacia" (1:3,950,000) + inset "Bosporus Thracius" (1:200,000). 4 tints
1900	Italia and Sicilia. Two sheets, both 1 : 1,200,000: (front) "Italia superior"; (back) "Italia inferior" + "Sicilia", 4 tints
1900	Palestine, Syria, and part of Mesopotamia, and a map showing St. Paul's voyages. 3 maps on one sheet, "Palestine" with 12 tints, the others with 4
26 April 1901	Graecia, Northern Greece, South & Peloponnesus. Two sheets, both 1:633,600: (front) "Graecia (northern sheet)"; (back) "Graecia (southern sheet)". 8 tints
27 January 1903	The Roman empire at different epochs. Two maps, both 1:12,000,000: (top, 4 tints) "The Roman empire A.D. 1-300"; (bottom, untinted) "Map showing development of the Roman empire B.C. 218 - A.D. 100". Separate index for each map
3 April 1903	The eastern empires. Two maps, both with 4 tints: (top, 1:12,000,000) "Empire of Alexander the Great"; (bottom, 1:14,400,000) "Empires of the Babylonians, Lydians, Medes and Persians"
3 July 1903	Asia Minor (1:2,500,000). Inset: "Troadis pars". 14 tints
22 June 1905	Mare Aegaeum, Athens, Rome, Egypt, and the Bosphorus. 12 maps (sizes and tints vary).



6

The Primary Classical Atlases and Map Series between 1870 and 1990 (1992)

A report published by the American Philological Association a decade ago did not exaggerate on either count when it cited cartography as “an area of extremely great importance, where the state of our tools is utterly disastrous”.¹ The resuscitation of this vital branch of classical studies should be a matter of urgent concern, and the Association’s commissioning of a new atlas of the Greek and Roman world under the editorship of the present writer is intended to serve as a seminal contribution. As background to that effort, the purpose of this article is to review significant initiatives of approximately the last century and a quarter, starting with the only major atlas to have been completed since 1870.

As will at once become apparent, the exercise is no mere matter of piloting the reader through materials already well known from standard works of reference.² In the 20th century at least, the formerly unified disciplines of classics on the one hand and geography and cartography on the other have drifted apart: the mapping of the classical world has been a prime concern of neither, and has languished as a result. Good maps are in any case costly to produce, and thus often highly priced. Print-runs tend to be small, and never repeated. Individual maps designed to form a series are liable to appear haphazardly and at long intervals. In plenty of instances the sequence has petered out, leaving a series incomplete: all too often, death or war have been responsible. Such additional factors as limited reviewing of maps in classical periodicals, ineffectual marketing, and differing decisions by librarians on how to catalogue and accommodate them, have all contributed to reduced awareness of the cartographic dimension of classical studies. Among map materials a bound atlas is the most likely to circulate widely and prove accessible, yet by nature its preparation imposes more delay, greater risk, and higher costs than the piecemeal issue of sheets over a period. It is understandable that few major projects have chosen this means of publication, yet their impact has repeatedly been diminished in consequence.

It must be stressed that this review deliberately confines itself to significant initiatives designed to map all, or at least a major part, of the classical world. Three related, and much less neglected, areas of activity feature only in passing. These are, firstly, local, regional or national mapping projects, ranging from town plans to surveys of entire countries: here the level of activity has been much higher than on the broad front, though predictably very diverse.³ Secondly, the many maps and atlases compiled principally for teaching purposes feature little here, because their preparation and circulation are governed in large part by a range of distinct factors not generally applicable to the major projects.⁴ Thirdly, the continuing scholarly interest shown in the rich fields of ancient geography (both theoretical and historical)⁵ and topography can make only a marginal appearance here, though this is in no way to be

taken as an adverse assessment of their crucial significance for mapping work.

Smith's *Atlas of Ancient Geography*

During the latter half of the 19th century, there were three attempts to produce a major classical atlas, each of which is reviewed in turn below. At the outset, it is as well to mention briefly certain features common to the preparation of them all. With few exceptions the maps are engraved on copperplate.⁶ Colour, added by hand in the 1870s, is used sparingly⁷ so as not to incur excessive costs. Out of similar concern, relief is indicated only by impressionistic hachuring, rather than by contour lines or altitude tints.⁸ In any case, especially on the fringes of the classical world, accurate relief data were not available. Inland, only those areas for which reliable explorers had furnished information could be represented with any degree of confidence.⁹ Scales are generally small, and determined in large part by the amount of space allocated to a region in the planning of the atlas; uniform scales are not a concern.

The first, and most successful, of the attempts was that of W. Smith (1813–93),¹⁰ under whose name the work was issued between 1872–74. Its modified title was *An atlas of ancient geography biblical and classical to illustrate the dictionary of the Bible and the classical dictionaries*.¹¹ As this indicates, the atlas was designed to accompany the very successful series of large reference-works which Smith edited for the leading London publisher John Murray, in particular the *Encyclopaedia of Classical Antiquity* in 6 volumes. Most relevant among the latter were the 2 comprising *A Dictionary of Greek and Roman Geography*, published successively in 1854 and 1857. The *Atlas of Ancient Geography* was promised at the end of the preface to the first volume (dated December 1853): it would be “on a sufficiently large scale to be of service to the more advanced student”. In his preface to the atlas itself, dated November 1874, Smith says that his work had been 18 years in the making. The biblical maps, he implies, had been compiled no earlier than the mid-1860s¹²—by T. Saunders, under the supervision of G. Grove (1820–1900), Secretary of the Palestine Exploration Fund, as editor.¹³ The classical maps form the majority, however, and planning for them surely did date back to the 1850s.

How it was that Smith came to engage C. Müller (1813–94)¹⁴ as compiler of these maps is not stated. Two, if not three, of the maps illustrating G. Rawlinson's *History of Herodotus* (4 vols.), published by Murray in 1858, are by Müller, but whether this commission preceded or followed Smith's approach to him is unclear. He was already well known to classical scholars as editor of

Geographi Graeci Minores, Strabo, and *Fragmenta Historicorum Graecorum* in Firmin-Didot's great *Bibliothèque des auteurs grecs*. He issued a volume of 29 elaborate pull-out maps to accompany the first in 1855, and a set of 15 maps to illustrate the second in 1857.¹⁵

Müller was educated in Göttingen and later returned there, but he lived in Paris from about 1840 to the mid-1860s. Despite writing mainly for Firmin-Didot as one of the many Germans recruited by this publisher, he seems not to have been employed there, but rather to have remained an independent scholar working for fees. Smith's major commission must have been the largest that he accepted elsewhere. Whatever its terms, Smith could hardly have made a better choice, and Müller rose to the challenge of producing the principal contribution to a classical atlas of unprecedented scope and detail. The only comparable work, the first part of C. von Spruner's *Hand-Atlas zur Geschichte des Altertums, des Mittelalters und der Neuzeit* (Perthes, Gotha 1850), was altogether much more modest, even after its revision by T. Menke in 1865.¹⁶

It is equally impossible to say whether the broad principles announced in the preface owe more to Smith than to Müller, or vice versa, but they mark striking developments nonetheless. The first is a concern "to give a complete set of maps of the Ancient World on a scale corresponding in size to the best Atlases of modern geography." Maps of such large size allow "space for exhibiting the natural features of each country, and for adding, wherever it was possible, the modern names underneath the ancient ones." Even more important, the preface reacts strongly against planning a classical atlas as Spruner/Menke had done, devoting the majority of maps to historical themes, and only a minority to "the geographical representation of particular countries." Taking that approach, "the number of such historical maps might be increased indefinitely, without adding in any way to the scientific value of an Atlas." Instead, the emphasis should be reversed: "in the present Atlas each country is delineated in a separate map on a large scale; but we have also given in addition a sufficient number of Historical Maps on a smaller scale.... The Atlas likewise contains plans of the chief cities of the ancient world."

A page-size of 12.5" wide × 19.5 was settled upon: was it accident or design that this was the size called for by one of Müller's pull-out maps for Rawlinson? At least he now had the opportunity to plan very large double-spread maps, each of which was produced as a separate sheet. Altogether 47 map pages were his work, including 16 double spreads, out of a total for the atlas of 68 map pages. Topo-graphical maps are accompanied by individual gazetteers. The initial issue was in fact 5 Parts of loose sheets with their gazetteers interleaved. The Parts were intended to be forthcoming quarterly, starting in 1872, but that schedule slipped. So in some cases a map was issued later than the year given on it; not all maps carry dates in any case.¹⁷ The price

of each Part was one guinea (21 shillings).

In Part V (1874), the maps were preceded by a title page for the complete volume; Smith's Preface (2 pp.); Contents page; and 26 pages of "Sources and Authorities for the Maps", most of this text no doubt by Müller and translated into English, although these points are left obscure. The atlas was then at once issued as a single bound volume containing all the maps in numerical order (with their indices interleaved) for a price of 6 guineas (126/-).

It is plain that the highly informative text was not finalized until the last possible moment. The entry for Map 18 (p. 16) even reproduces a plan of excavations in the Roman Forum dated the same month as the Preface (November 1874).¹⁸ In addition to explaining his sources and justifying his stand on certain major topographical issues, Müller uses the text to apologize for not taking into account particular works published subsequent to the compilation of a map, and to ask readers (as on p. 21) to ignore certain places marked or to shift others. Most notably, he more than once found that after his map of an area was completed, the relevant volumes of *CIL* appeared.¹⁹ All the same, he maintained his commitment to fullness and accuracy throughout the unavoidably long period of compilation.

Even so, it would be wrong to assume that he created new maps in every instance: the task was too daunting for that, and in some cases he may have felt that he had little to add to recently-produced material beyond, say, taking advantage of the opportunity to add some colour. Thus two, if not three, of the items which make up Map 1 in the atlas draw on his own earlier work.²⁰ Map 3 is a slightly altered version of the pull-out frontpaper which he had drawn for Rawlinson's vol. 2, with its bottom 3 inches now sliced off to accommodate the new page-size.²¹ Map 21, however, his pull-out frontpaper to Rawlinson's vol. 4, fitted that page-size perfectly. Elsewhere, he borrowed or adapted the maps of others: French ones of the 1860s for Map 12 (text p. 12), for instance; one by Mommsen for the "Military map of Italy about 150 B.C." for Map 15 (p. 14); and a French survey published in 1856 for Map 19 (p. 16).

Müller also very reasonably sought to save some time by using the same base design more than once. Thus the base for Map 8 seems to be a copy of 7, and 23 a copy of 22. It would appear that for Maps 7 and 8 the London engraver E. Weller produced copies of Map 4 made by the Parisians S. Jacobs and I. Dalmont. This pair had already worked with Müller—the former extensively, being responsible for the line-drawing of all the maps to illustrate both the *Minor Greek Geographers* (*GGM*) and Strabo. Dalmont had done all the lettering for Strabo, and was one of four to work on it for the *Minor Greek Geographers*. Most of the engraving for the atlas was done by E. Weller; some is attributed simply to "Stanford's Geographical Establishment", London.²²

Beyond question the atlas is a great achievement that combines a major

advance in the cartographic representation of both the classical world and the biblical lands with serious attention to contemporary scholarship. Müller played the key rôle in all of this.²³ Yet the work evidently did not sell. Murray's records indicate very modest reprinting in 1875, but none thereafter. Altogether perhaps no more than about 1500 copies of any part were produced, whether for sale loose or for binding into the volume.²⁴ Too many potential buyers were perhaps deterred by its learned detail, not to mention its weight and size. At the same time the price must have been a deterrent. H. Kiepert—who had a shrewd commercial sense—found particular fault with it, and he was probably right. Smith's atlas therefore remains a rarity. Its impact in the short-term was less than might have been hoped for, although E. H. Bunbury does express "in the strongest manner" (p. xi) the obligation that he owed to Müller's maps in preparing the 20 uncoloured ones for his own *History of ancient geography among the Greeks and Romans from the earliest ages till the fall of the Roman empire*, published in two volumes by Murray in 1879. H. F. Tozer in turn drew upon Smith's atlas and Bunbury for maps in his *History of Ancient Geography* (1897). The formative influence that parts of the atlas would turn out to have in the 20th century was, of course, quite unforeseen.

G. B. Grundy and Murray

In the late 1890s Murray invited G. B. Grundy (1861–1948), lecturer in ancient history (on behalf of the professor) at Oxford University, to prepare a revised edition. The two works which emerged cannot strictly be classed as major, but they do merit attention here for their distinctive advancement of the mapping of the classical world, and for their later influence; in addition, they owe much more to Müller than seems to be generally appreciated.

An important account of the circumstances—albeit an egotistical piece of writing, not always accurate in detail—survives in Grundy's autobiography.²⁵ From this the nature of the revision which he and Murray initially envisaged remains obscure, although it does seem to have been something more thorough than the eventual result. Grundy insisted at the outset that maps for which he was to be responsible must have altitude tinting. This, as he puts it, "gives the ordinary user of maps the most effective method of learning at a glance the nature of the country he is studying" (p. 149). He cites tinted maps of the Austrian Empire as having first drawn his attention to this method, although a lifelong interest in maps and experience in lecturing on recent military history as an Army tutor during the mid-1880s are sure to have

sharpened his awareness of physical landscape.²⁶

When Murray's map printer, Bartholomew of Edinburgh, advised against tinting as too costly an innovation, and Murray therefore ruled it out, Grundy declined to act further as editor. Three months later, however, during which evidently no replacement could be found, Grundy agreed to resume when Murray acceded to his demand. It was then left to Grundy to demonstrate to Bartholomew what was required. This he did by arranging for an establishment fortuitously owned by his brother to engrave and print a simple tinted sketch of England, a job apparently completed within a day at low cost.

Cost presumably still troubled Murray. Smith's great atlas cannot have been profitable; there was no sense in preparing a revision which would show a loss too, especially now that the incorporation of altitude tints had been conceded. So a very cautious plan was adopted. Instead of an atlas, 10 separate booklets would be issued, each containing one folded map sheet and its gazetteer (in the style of Smith's atlas); exceptionally, for Greece and Italy, the booklets would offer a pair of sheets with gazetteers sandwiched in between. Fairly soon the addition of one more booklet was announced. Their rate of publication slowed down after an initial surge, though whether that reflected Murray's caution or delays of some other type is unknown. It was 6 years (1899–1905) before all 11 booklets appeared, under the title *Murray's Handy Classical Maps*. They contain no text, and were never assembled into a volume.

Whatever the reasons—such as instructions from Murray to economize, or colleagues' failure to assist²⁷—Grundy developed little fresh material for the series. According to his autobiography, "the map of Palestine was edited by Professor George Adam Smith of Aberdeen" (p. 150), although Smith's name does not appear on the sheet, and it is not clear whether he was responsible for just "Palestine" or for all three maps in the booklet. "Palestine" is certainly a good map, as Grundy himself thought. The same applies to "Asia Minor", newly drawn and compiled by J. G. C. Anderson, though still covering exactly the same area as Smith's Map 29.

Otherwise for the remaining *Handy Maps* Grundy relied heavily on Müller's contribution to Smith's atlas; a sheet size was adopted for the series which allowed maps to be taken over from it. The "revisions" cited on the relevant *Handy Maps* vary in depth. "Britannia" reuses Smith Map 10, but the latter is considerably altered by F. Haverfield and the name of its compiler (E. Weller) is not mentioned. In "Eastern Empires" the lower map is based on Smith Map 3, with some items added, others removed. In the cases of "Gallia", "Hispania", "Germania", "Italia and Sicilia" and "Roman Empire", however, the revisions appear to consist only of simplification: places about which Müller had expressed doubt are now removed, along with some (but not all) modern names. "Mare Aegaeum" varies in its reliance upon Smith. "Piraeus" (*sic*) and

“Acropolis” are notably different from their equivalents in Smith Map 25. Yet “Athenae” is a simplified re-drawing to a smaller scale of “Plan of Athens”. “Rome during the Republic” and “Rome in the Time of the Emperors” are similarly derived from their equivalents (Smith Map 18). Like so many of the other *Handy Maps*, the pair for “Graecia” are stated to be “revised by G. B. Grundy”, but this may be a slip. The advertisement at the end of *Murray’s Small Classical Atlas* (ed. I, 1904, see below) says uniquely of “Graecia” (issued in 1901) “an entirely new Map, engraved for this series”. Grundy travelled extensively there during the 1890s, and the claim seems credible.

It might well be felt that Müller is once again given less than his due by Murray’s *Handy Maps*. Although his work is attributed, attention is never drawn to the atlas where it had been published, let alone to the explanatory text accompanying each map. Müller’s name does not occur in Grundy’s autobiography. Yet it would be extreme to argue that Grundy had simply republished Müller’s work with minor changes: the altitude tinting gave a completely fresh appearance to Müller’s rather pale maps, and offered the reader a more accurate idea of relief than any previous classical map series, even if Grundy’s were not (as he fancied) the first tinted maps produced in Britain.²⁸ Grundy was mostly content with only 3 or 4 tints on each map, but 8 appear on “Graecia”, and Smith and Anderson, his collaborators, distinguished as many as 12 and 14 on theirs. Another visual improvement was the rendering of principal boundaries in red. Use of tints without contours or shading of relief can give to maps a less dramatic appearance; but classicists accustomed to the impressionistic hachuring and limited use of colour in Smith’s, Sieglin’s and Kiepert’s atlases (see below) must have been struck by Grundy’s presentation in the *Handy Maps*. And the reduction of Müller’s mass of toponyms made his work more accessible again, despite the severe restriction of its range. Thus, Grundy in fact gave the core of Müller’s work a new lease of life. The series was not cheap—12/- for all 11 booklets printed on paper with paper covers, 24/- with the maps printed on linen and hard cloth cases.²⁹ But it remained in demand, being partly reprinted as late as 1967. The bottom map from its “Roman Empire” was added as a foldout endpaper to the second edition of W. T. Arnold, *The Roman System of Provincial Administration* ... (Blackwell, Oxford 1906), with acknowledgement (p. iv) to Grundy, though none to Müller. Its “Britannia” played a rôle in inspiring more ambitious maps, and later its “Asia Minor” formed the base for a revised map of that region.³⁰

Murray’s Small Classical Atlas

The series had its most visible influence in serving as the basis for a textbook atlas published by Murray in 1904 under Grundy's editorship (price 6/-).³¹ In the preface he finds fault with earlier textbook atlases for "failure to show, with the requisite prominence, the natural features of the countries,"³² as well as for "lack of clearness, owing to the congestion of names in important sections of the maps, and the confusion created by the engraving of names across *hachured* mountains". The first was remedied by his use of altitude tints (four on most maps), the second "by having all the names necessary for the purposes of ordinary classical study printed in a peculiarly *clear and legible type*."

The atlas consists of a single comprehensive gazetteer followed by 14 maps, all double spreads prepared as separate sheets (so that alternate double pages are blank, as in Smith). The spreads vary in size, but most are c. 15" wide × 11–12. No map is attributed to a compiler, and there is no text to give commentary, but it is hardly a surprise to find earlier maps published by Murray as the foundation for the volume. The bottom *Handy* "Eastern Empires" forms the basis for I.³³ "Roman Empire", "Britannia", "Gallia", "Germania", "Mare Aegaeum"³⁴ and "Palestine" form the basis for II + III, IV, VI, VII, IX + X + XI, and XIV, respectively (allowing, of course, for simplification, reductions in scale, and removal of insets). The atlas was deservedly popular, went into a second edition in 1917,³⁵ and was reprinted seven more times (last in 1967). How little can Müller have expected that adaptations of so many of his maps would still be in print a century later.

Sieglin's *Atlas Antiquus*

Second of the major atlases in the late 19th century was the *Atlas antiquus: Atlas zur Geschichte des Altertums* of W. Sieglin (1855–1935), published by Justus Perthes of Gotha, starting in 1893. Formally it was a new edition of the first part of von Spruner's atlas as revised in 1865 by Menke;³⁶ in practice, Sieglin's revision is an original work in all but name. The plan was to issue 34 sheets in 8 fascicules at 6–8 week intervals, followed by a gazetteer. This was a highly optimistic schedule, which could have led to completion within about a year. Six fascicules would contain 4 sheets each, 2 would contain 5 sheets each. The retail price of a fascicule was set at 2 Marks 50 Pfennig, and never raised. The 34 sheets would offer 19 "general" or topographical maps (Übersichtsblätter), 94 historical ones, and 73 insets. Map sizes vary considerably, the maximum for a double spread being about 15.75" wide × 12.5.

There are no accompanying texts, nor an author's preface. The schedule was not met, although the initial pace was still brisk enough. The first fascicule (1893) comprised sheets 3, 5, 8, 25, 30; the second (1893) comprised 1, 2, 24, 29. The third (1894) comprised 4, 17, 21, 28. The fourth and fifth (both 1895) comprised 6, 22, 23, 26, and 9, 10, 20, 27 respectively. Nothing further appeared until 1909, when Sieglin's former pupil Max Kiessling prepared the sixth (sheets 14–16 and 18). But neither he nor Sieglin persevered, so that, of the 34 sheets planned, 9 (and the gazetteer) were never forthcoming. However, Sieglin did produce a *Schulatlas zur Geschichte des Altertums* (28 map pages, no text), which Perthes first issued in 1899 and reprinted into the 1930s: it was well received, and evidently very cheap.³⁷

Because the archive of Hermann Haack, the successor to Justus Perthes in Gotha, holds no correspondence relating to the *Atlas Antiquus*, it seems impossible to discover the circumstances surrounding Kiessling's short-lived continuation. Sieglin's abandonment of his own project in 1895, when it was already about two-thirds finished, is a more serious puzzle. According to the publisher's preface in the first fascicule (1893), he had spent as much as a decade combing relevant sources. From the table of contents issued then it is plain that he had planned out his atlas in great detail. Its immense number of historical maps and insets (which naturally relied upon some standard bases)³⁸ was unrivalled among classical atlases.³⁹

Sieglin's work had an important, distinctive aim, and its maps are scholarly and well presented, with particular attention to historical change; special care was taken not to overcrowd them with names. If there is a major shortcoming, it lies in the absence of text. H. Philipp wrote in his obituary for Sieglin in 1935, "Nur der Fachmann weiss, welche entsagungsvolle Arbeit geleistet werden muss, um eine derartige Arbeit, die nur *ein* Kartenblatt füllt, zu leisten; sie ersetzen viele Buchwerke".⁴⁰ But such a claim only reinforces the point that a major atlas of this type calls for the exposition of its sources and themes that Sieglin was well qualified to furnish.⁴¹ Yet sensitivity on this issue was probably only a minor element in his decision to abandon the atlas; instead, the chief cause is perhaps the appearance of the first part of H. Kiepert's rival *Formae Orbis Antiqui* in 1894,⁴² which may have made Sieglin feel that his own work was now redundant. If so, his reaction seems extreme. Sieglin's deliberate focus was on political and military aspects of ancient history; Kiepert's table of contents, on the other hand, demonstrated that his *Formae* would be closer to Smith's atlas in giving less space to historical themes and more to topography.

Even so, Sieglin's decision may reflect a broader and more lasting crisis of self-confidence from which he never recovered.⁴³ Prior to the *Atlas Antiquus* he had already drawn or revised some 8 pages of maps for G. Droysen's

Allgemeiner historischer Handatlas (Bielefeld & Leipzig 1886), in addition to being responsible for perhaps 20 pages of its historical text. But from the mid 1890s he published little. He was a librarian at the University of Leipzig for 18 years until made Professor Extraordinarius of historical geography there in 1898. Even after the ironic accolade of appointment as Kiepert's successor the next year, his scholarly activity in Berlin was largely confined to editing the series "Quellen und Forschungen zur alten Geschichte und Geographie", which he established in 1901 and which continued until 1918, 4 years after he had resigned from his Chair because of ill health. Neither he (nor Kiessling) ever published in the series (although one title by each was announced at the launch and later another by Sieglin). Since World War I his unfinished atlas has suffered the undeserved fate of being all but forgotten. Copies with the 6 fascicules complete (the last especially) are rarely to be found even in major libraries.⁴⁴

H. and R. Kiepert

The third of the late 19th century attempts was Heinrich Kiepert's *Formae Orbis Antiqui*, its first part appearing in 1894. He intended this work to be a fulfilment of the patent need for a definitive classical atlas which, as he says in the preface, since his days as a student he had been concerned to remedy. He acknowledges with respect the achievement of Smith's atlas, although he adds that it had been too expensive and had rapidly become outdated (as was inevitable in view of the progress of *CIL*, and other developments). Kiepert's exceptionally active career, of which *Formae* was to be the climax, still awaits an extended assessment⁴⁵ but its outline is clear. He was born in Berlin in 1818 and educated there. At its university he was strongly influenced by Carl Ritter, holder (Professor Ordinarius) of what was for long Germany's first and only established chair of geography.⁴⁶ Like him, Kiepert pursued geography primarily for the contribution it could make to ancient history. This was the accepted approach to the subject for much of the 19th century: only towards its end did a split (to become lasting) develop between the physical and historical sides. Kiepert was made a member of the Berlin Academy in 1853, and held a position at the university there from 1859, although he only became Ordinarius when Ritter's chair was finally filled in 1874. His writings are important,⁴⁷ but the production of maps and atlases (not all of the ancient world, and not just for scholars) was his chief concern.⁴⁸ Though not his first textbook classical atlas, nor his only one, the *Atlas Antiquus* (with 12 double-spread maps)

became the most famous; its first edition (of 12) dates to 1859. In the preface to *Formae*, Kiepert confesses that, because his aim of producing a larger classical atlas had been so long delayed, he had included in the *Atlas* much more information than was appropriate for school use. With the appearance of *Formae*, he now promised to remove such excess material (but this was never done).

Prior to *Formae*, his most important set of classical maps were the nearly 30 regional ones compiled to accompany his friend Mommsen's *CIL* between 1869 and 1892. Its page size is 10.25" wide × 14.5. These maps are lithographed. Most are either double spreads or pull-outs two or even three times pagesize. They are not easy to refer to.⁴⁹ None is accompanied by its own text or gazetteer. The well-defined purpose of illustrating volumes in which epigraphic discoveries are set out place by place limits the scope of each map and governs the choice of scale. There is great variety of scale, from 1:5,000,000 in the case of "Imperii Romani Pars Graeca" to 1:200,000 for Latium. Parts of Italy and southern Gaul are shown at 1:500,000, but elsewhere the norm is 1:1,000,000 or smaller. No map gives any indication of latitude or longitude, nor is there much use of colour: names in black type can prove hard to read against a background of brown shading.

At his death in 1899 Kiepert left 10 further maps due for *CIL* III Supplementum still unfinished. His son and collaborator Richard (1846–1915)⁵⁰ completed those in the format of the others to accompany the publication in 1902.⁵¹ They represent only one major commitment among several which H. Kiepert left outstanding. There was also the *Formae* itself, planned by him on a scale ambitious indeed for a man in his 70s. There were to be 36 maps, each up to 52 cm wide × 64 (his own figures) or 20.5" × 25.25; they would be published by Dietrich Reimer of Berlin in 6 parts, each containing 6 maps "with critical text giving the authorities consulted added to each map", at a price of 3 Marks or 5/- per part. This bargain price was doubtless intended to undercut Sieglin's atlas from the rival publisher Perthes.⁵² The text would be available in German and English. The first part (preface, contents page, Maps IX, XII, XV, XVII, XXVI, XXVII and their texts) was issued thus in 1894. Yet in the English texts (presumably his own translations) Kiepert omits parts of the German. The projected make-up of the other 5 parts was not specified.

Although H. Kiepert might deplore the comparison, the fact is that his atlas resembles the classical part of Smith's in several respects: Kiepert too planned many more regional than historical maps, though the latter were not ignored. The scales and scope of the maps in each are not so very different, except that Kiepert gave hardly any modern names.⁵³ Kiepert shared Smith's concern to provide text to expound each map's compilation. Yet there were also some departures by Kiepert: he intended to furnish texts of unparalleled length and

detail, and to issue his atlas piecemeal over an extended period, yet still keep the price remarkably low. Again, in the 30 years since the maps were drawn for Smith there had been great advances in classics, geography, and related fields.⁵⁴ Through his mapping work and journeys Kiepert had taken a leading rôle in several of these, and from *CIL* and other involvements he had acquired an unmatched grasp of current knowledge of different regions of the classical world. But he began his great work too late in life. He might perhaps have prevaricated even further had not Sieglin's atlas started to appear in 1893. Certainly he had Sieglin's map of Britain to hand when he composed the text about his own (the one region which both mapped in their first parts). But between then (1893–94) and his death in 1899 he evidently worked only on Map XIX.⁵⁵ He had realized that he would probably not live to complete *Formae* himself, and therefore made his son his collaborator from the outset. Even so, the latter, many of whose cartographic interests lay beyond the classical world, can hardly have anticipated that his father would die with only one-sixth of the work done. Nevertheless he pressed on alone, drawing upon the mass of earlier relevant work by his father and himself (for bases especially). But now maps for *Formae* would come out only singly or in pairs, and the texts would be limited to German. A more realistic price (3 Marks) was set—and that not per part, but for each map. This price held to the end.⁵⁶

R. Kiepert completed XIX and issued it in 1901. Thereafter for 13 years progress was slow but fairly steady. Maps XX and XXIII came out separately in 1902, XXI and XXII as a pair in 1904. The pair XIII and XIV appeared in 1906, with another pair (X and XVI) and a single map (VII) in 1908. Single maps followed: V and VIII (1910), VI and XXXV (1911), the pair XXXIII and XXXVI (1911), single maps XXXIV (1912), XXV (1913), XXIV (1914). Texts grew shorter towards the end, and none accompanied XXXV or XXXVI. But the brevity is partly due to the topics of the maps in question. As late as 1909 R. Kiepert wrote 20 pages (the longest text of all) for VIII “Asia Minor”, an area of special interest to both Kieperths.⁵⁷ Overall, the 19 maps and 17 texts published by R. Kiepert maintain the high standards set by his father's 6 of each. *Formae* remains an essential resource and starting-point for future work, particularly for those regions that have been mapped little since. But it is hard to find a copy with nothing missing: sales appear to have been low, and it has remained much less known than it deserved.⁵⁸

Like Sieglin's atlas it has remained unfinished. R. Kiepert died in 1915 with 11 maps and the comprehensive gazetteer still to follow. The only recorded initiative to complete the work seems to be that of V. Burr (1906–75),⁵⁹ sponsored first by the Berlin Academy in 1938, then in association with the Union Académique Internationale. Burr made a start on Map XI and expected to have it ready by late 1939, but was then called up for war service, which

halted further progress—for good, as it turned out. In 1941 it was reported that “sein Manuskript mitsamt den Kartenskizzen liegt im Panzerschrank der Akademie” and they were presumably still there when the Academy was bombed in 1943.⁶⁰ Reimer’s premises were gutted by bombing in 1945.⁶¹

The aftermath of World War I and the Union Académique Internationale

World War I marks a clear break in efforts to map the classical world. Engraving on copperplate was finally abandoned in favour of other materials and techniques.⁶² Mapping of landscape became increasingly accurate with the development first of aerial, then of satellite, photography, as well as other advances. Since R. Kiepert’s death, no one has aimed to produce a major classical atlas single-handed. Rather the expansion of scholarly activity has required collaborative effort by specialists in different areas or topics, and many areas must be mapped at larger scales than 19th-century atlas-makers would have considered adequate. Meanwhile biblical map-making has for the most part come to be pursued separately.

On R. Kiepert’s death the split between physical and historical aspects of classical geography seemed finally complete. His father had not acted to stem this rift. After Berlin University had recognized the fresh direction being taken by the discipline through its establishment of a Chair of physical geography (F. von Richthofen held it from 1886),⁶³ H. Kiepert became increasingly distanced from geographers and had no followers among them except for his son. Indeed, although he continued to influence archaeologists and ancient historians greatly, he had no ‘school’ there either. His isolation was only deepened by a temperament which, though still capable of friendliness and sympathy, was in old age increasingly liable to appear irascible and intolerant.⁶⁴ His successor Sieglin, by contrast, was a warmer character and did attract pupils. But because his interests were confined to the ancient world and historical geography, nothing was done to repair the split with the physical geographers.

Since World War I comprehensive mapping of the classical world has been proposed from time to time, but so far without tangible result.⁶⁵ Instead, efforts have centred on mapping one or other substantial segments during a particular period, in some cases at a uniform scale. The first such proposal was one of two sent to the first annual meeting of the Union Académique Internationale in 1920 by the Accademia dei Lincei, Rome. The goal was to produce an

archaeological map of the Roman empire at 1:1,000,000 (c. 16 miles to the inch). However, no details were attached, so with the Academy's delegate R. Lanciani (1847–1929) unexpectedly absent, consideration was deferred until the following year.⁶⁶ Lanciani came in 1921 and on 26 May a commission for a *Forma Romani Imperii* was set up,⁶⁷ and instructed to report back two days later, when it presented a set of proposals.⁶⁸ The principal scheme was the compilation of a map of the Roman world as it was around A.D. 200 at a uniform scale of 1:250,000.⁶⁹ Each nation was also urged to compile further maps of a scale and type appropriate to the circumstances of its area at other stages of prehistory and antiquity. The long-term goal (stressed by Shotwell) should be to build up a series of historical maps for the various regions of the ancient world from neolithic to Byzantine times. The main map, *Forma Romani Imperii*, would be overseen by a permanent managing committee of six representing the nations of the six proposers. All UAI member nations were to be canvassed for their opinions on the proposals, but meanwhile the six proposers stated that the academies which they represented would certainly be supportive and would even start work on their own areas at once.⁷⁰ Belgium, Switzerland and Roumania would only map their own home territories; Greece would cover all the islands of the Aegean (thus including, presumably, those held by Italy). Britain and France would aim to map those areas of Syria, Mesopotamia, Palestine, and Roman Arabia which they held. The report concluded with a crescendo of justification (pp. 263–64):

La Commission est unanime à reconnaître et à recommander à l'Union l'importance de l'oeuvre que ce projet suggère. Sont également intéressés à ce projet les instituts de science pure (histoire, archéologie, philologie) et les simples instituts d'éducation et d'instruction de caractère élémentaire, secondaire ou supérieur. Le monde romain, d'où le monde moderne tire presque entièrement ses origines, même chez les nations qui ne sont pas néo-latines, doit avoir enfin une représentation graphique complète de son aspect sur le terrain. La Commission prie donc l'Union de se faire auprès des Académies qui la composent, et par celles-ci auprès des Gouvernements, l'interprète de ses instances pour que ce projet, qui demande de très importants sacrifices scientifiques et matériels, puisse être le plus tôt possible mis à exécution.

Once these intoxicating proposals, formulated in just two days, were subjected to more sober reflection by member academies, mixed reactions resulted. Was it mere accident that several of the six proposers were not reappointed as delegates to the 1922 UAI meeting? In discussion, enthusiasm for the *Forma Romani Imperii* was expressed by some, but others pointed out that their

countries already had mapping projects which might not fit the format now recommended, while yet others (including de Sanctis for Italy) murmured politely about foreseeing difficulties of a practical and financial nature.⁷¹ In the printed record, at least, no speaker is so bold or so cartographically aware as to point out that the proposed *Forma* would need to comprise c. 900 large map sheets.⁷² And nobody pointed out that maps on a scale as large as 1:250,000 had *never* been made of huge stretches of territory once within the Roman empire, so that for those it would be impossible to draw upon materials already existing. Admittedly, as Homolle stated, for thirty years and more the French had been active in making archaeological atlases of their North African territories, comprising dozens of maps at even larger scales, and this work was continuing. Even so, for UAI to tackle the entire Roman empire in comparable fashion was a proposition of quite a different magnitude. Ultimately, and not surprisingly, the meeting shrank from the challenge, but it is puzzling that it did not reconsider the scheme using the 1:1,000,000 scale originally proposed (in place of the quite impractical 1:250,000). Instead, a tactful, well-meaning compromise was unanimously adopted (pp. 312–13):

Chaque pays dressera, pour son compte, autant que faire se pourra, des cartes archéologiques de la partie du monde romain dont il est détenteur, avec toute liberté pour le choix des échelles. Il est souhaitable que ces cartes partielles puissent préparer, quand les circonstances le permettront, la confection d'une carte générale à l'échelle unique du monde romain tout entier, suivant le voeu de l'Académie des Lincei.

UAI went on to offer itself as “intermédiaire, coordinatrice, et patronne” of individual countries’ mapping efforts, and members agreed that they would exchange views and report progress at the annual meetings. Relevant national maps could carry the heading *Forma Romani Imperii* or (as it became in 1927) *Forma Orbis Romani*.⁷³ The annual reporting invited by the resolution of 1922 was in fact maintained, although it became increasingly brief after World War II.⁷⁴ In 1960, three years after UAI had eventually assumed sponsorship of the *Tabula Imperii Romani* (see below), it was agreed by majority vote to abolish *FOR* in order to concentrate effort on *TIR*.⁷⁵ However, since there was nothing tangible to bring to an end on the part of UAI itself, brief annual reporting continued, though for years information has been forwarded only from the *Forma Italiae*.⁷⁶

Crawford, the International Geographical

Union, and the *Tabula Imperii Romani* (TIR)

Although the proposal for a map of the Roman empire at a uniform scale was left in 1922 as no more than a pious hope, a similar proposal would emerge in 1928 from a different quarter. It came from O. G. S. Crawford in England, a figure of unconventional training, experience and character, who was only on the fringe of academic circles.⁷⁷ He was probably as unaware of UAI and its discussions as his scholarly collaborators certainly were of the modern map-series on which he proposed to base the project.⁷⁸ After first studying classics at Oxford, Crawford became excited by subjects which were only beginning to be recognized in British universities—archaeology, anthropology, and geography—and switched to the Diploma in geography. With the wild ambition for that era of earning a living as an archaeologist, at last in 1920 he was appointed the first-ever Archaeology Officer of the Ordnance Survey, the military authority responsible for the mapping of Britain.⁷⁹ His war service just before that had included the taking and interpretation of aerial photographs—techniques whose application to archaeology he (among others) was to pioneer and refine from then onwards.

He was encouraged by Sir Charles Close, who had appointed him, to prepare archaeological and historical maps of Britain. Crawford found that he needed first to win acceptance for *his* vision of how material for such maps should be presented, in preference to Close's scheme, and then to overcome the scepticism which Close's successor, E. M. Jack, felt for the whole enterprise. With his mixture of diplomacy and prickliness Crawford successfully overcame these challenges. Roman Britain was the first map in his series (1924), and he acknowledged that its format was influenced by *Murray's Handy Classical Map* Britannia, which he had used at school.⁸⁰ Yet such a map was something of a novelty at the Ordnance Survey,⁸¹ with the result that Crawford had to start from scratch: a scale had to be fixed (1:1,000,000), and a base with the physical features drawn. Both Crawford and the entire Survey were obviously surprised by its runaway success when the first print-run of 1,000 sold out within a month.

In July 1928 the International Geographical Union was due to hold its triennial meeting at Cambridge, and Jack asked Crawford to contribute a paper. In his autobiography Crawford confesses that he was rather at a loss for a topic, so he determined to advocate the ambitious scheme which had occurred to him as a result of his success in 1924—to map the whole Roman empire at a uniform scale using the map of Britain as a model. He claims that

he expected no “concrete results” from the proposal, and to have been surprised by its enthusiastic reception.⁸² Perhaps he need not have been, for it was a visionary plan, well thought out in many respects. He proposed that the IGU should sponsor an international effort to prepare a map of the Roman empire based on the International Map of the World at the Millionth Scale—the ideal resource in his view, “when the area to be covered is large and when it would be impracticable to produce a specially drawn base-map”.⁸³ He explained that “the map would aim at being at first no more than a skeleton—a kind of amplified Bradshaw map⁸⁴ of the Roman empire.... There is no reason why more detailed editions of all or any sheets should not be published later; but I am sure it is important to adopt a limited objective at the start, and to formulate some quite definite rules about scale and scope. A scheme of this kind, requiring international co-operation, is likely to fail if too ambitious a programme be attempted” (p. 404). He was aware that new research was required in some countries (Roumania especially, where he urged the use of aerial photographs). But he warned against undue delay, and stressed the importance of a speedy start on an area already well researched, such as central and southern Italy. In his view, “the most formidable difficulty to be overcome is that of international co-operation. The national frontiers of the Old World unfortunately do not follow lines of latitude and longitude, as do the sheet-lines of the International Million Map” (p. 405).

This map series proposed for a base by Crawford was a project first suggested in 1891 and finally launched in 1913. Every nation would map its own territory at a scale of 1:1,000,000 to a standard format. Except close to the poles, each sheet covers 4° of latitude by 6° of longitude on a regular pattern.⁸⁵ No real progress was made until after World War I, and even by 1928 only 23 of the 48 sheets covering the area of the Roman empire had been issued. As it turned out, Crawford’s bold expectation that the remainder would be compiled in due course was justified, and he was well placed to maintain contact with IMW because, luckily, its central bureau was housed at the Ordnance Survey headquarters in Southampton. On the proposal of Jack and Close, IGU unanimously agreed that a Commission (no. 7) for the Preparation of a Map of the Roman Empire be set up, with Jack as president, three members representing France, Italy and Spain (more to be co-opted as required), and a secretary of its own choice (Crawford).⁸⁶

The Commission met for the first time in Florence on 30 April and 1 May, 1929, at the invitation of General Vacchelli, Director of the Istituto Geografico Militare.⁸⁷ A report in four languages issued by the Ordnance Survey⁸⁸ recorded the adoption of the main features of the scheme as outlined by Crawford the previous year. It included a list of the IMW sheets to be covered and the government responsible for each, together with an index diagram and

a list of symbols. The latter topic came to irk Crawford: “Much of our time at this [1929] and every other meeting was wasted in the discussion of the symbols to be used; everyone had bright ideas about symbols, if not about anything else”.⁸⁹ Yet the report reflects a useful and balanced discussion stemming from a clear statement of purpose: “The principal object of the Commission is to produce a Map of the Roman Empire which will be of use both to students and to the general public. The Commission regards it as most important, therefore, to keep the map *as clear and simple as possible*. It should be borne in mind that it is to be a historical map, not an archaeological one” (p. [2]). Perhaps characteristically, the list of symbols includes nothing with which to denote a less-than-certain name or location. Nor does there ever seem to have been discussion of whether indisputably modern features might be removed from the landscape, and if so how. Crawford’s approach was simply to accept IMW sheets as a base “as they stand”,⁹⁰ “except that for the black detail plate is substituted a black archaeological plate, and the red road plate is omitted altogether.”

The chronological range was specified as “extending from the first appearance of the Romans in each region down to the fall of the Western Empire” (p. [1]), though no means of distinguishing a post-Diocletianic site, for example, from an earlier one was devised. “For the sake of clarity” the number of symbols was to be kept short; only isolated temples, shrines, amphitheatres and other monuments were to be shown (thus omitted if sited in or near a town); archaeological evidence of lesser importance would likewise be omitted; ancient place-names and their modern equivalents would be given, in different type-styles. The names of potential compilers had to be settled upon and approaches to them arranged. Finally it was planned that the first sheet would be K 33 *Roma*, compiled by G. Lugli and T. Ashby, and issued by the Istituto Geografico Militare.⁹¹

By the time that the Commission held its Florence meeting it must have been aware of UAI’s *FOR* since Jack went out of his way to stress that the purposes and scales of the two projects were quite different.⁹² Subsequently, at the 1929 UAI meeting, Crawford’s new proposal was reported with some alarm, but in discussion there was recognition of the differences underlined by Jack. The upshot was a resolution to bring the attention of IGU to the UAI project, and possibly even envisage some exchange of findings.⁹³ At a number of UAI meetings during the 1930s, some unofficial report was given of the progress of Crawford’s project.

The Commission next met at the 1931 Paris IGU Congress with Jack’s successor (from 1930), H. St. J. L. Winterbotham, presiding. Four provisional sheets were displayed: N 30 *Edinburgh* compiled by Crawford, K 33 *Roma*, and the pair K 29 *Porto* and K 30 *Madrid*, which the Spanish delegates de Cifuentes

and Ortiz e Tribas had produced with no prior notice. Their compiler is unidentified, much of the work unscholarly, and the corrections requested were never made; but the sheets were never published, and few copies of these proofs are now known. Pellati and Lugli explained the aims behind their provisional compilation of K 33 and discussed the chief difficulties encountered, particularly that of choosing items from populous and well-documented areas for inclusion at the stipulated scale. The contrast between problems of selection and presentation for N 30 and K 33, as they tactfully implied, was extreme. The Italians had, among other expedients, omitted modern place-names for lack of space, and had considered it impossible to mark forested areas with any confidence.⁹⁴ W. F. Hume, for the Survey of Egypt, gave a progress report on the four sheets for Egypt. Finally, the Commission asked IGU to transfer control of the project to the Central Bureau of IMW during the intervals between the triennial IGU meetings, which was agreed to as a good practical arrangement.⁹⁵

In December 1931 Crawford went to Frankfurt to discuss the map with G. Bersu (1889–1964), Director of the Römisch-Germanische Kommission.⁹⁶ They struck up a lasting friendship, and Bersu joined the Commission and assisted in organizing its next meeting, held in Rome on 21–22 November, 1932. The delegates were presented to Mussolini, the Italian government acting as host.⁹⁷ Proofs of three more provisional sheets printed by the Istituto Geografico Militare (J 32 *Tunisi*, J 33 *Palermo*, K 32 *Firenze*) were put on display; and, as the Ordnance Survey report reflects,⁹⁸ further attempts were made to settle matters of format and standards. It was decided to reproduce altitude tints in the style of IMW but to omit contours. Modern names would be given only sparingly (most obviously where the ancient name was unknown), and provincial boundaries would be omitted “because of the fact that these boundaries changed often during the Roman period, and often indeed are entirely unknown” (p. 6). But the series of maps was now to be extended to include “all regions where traces of Roman penetration had been found” (p. 4), in particular to the southern limit of Nubia, bringing the total of sheets to 52. There was also support for adding some form of text to the map: “Because of the great divergencies that exist between the various countries, it was found that a uniform plan for the text for each sheet was impracticable. On the other hand, it would be advisable to compile an index for each sheet; this index might have bibliographical references to publications of a general character” (p. 5).⁹⁹

The Commission next met in Warsaw in August 1934, on the occasion of the IGU Congress. Drafts of J 32, J 33 and K 32 were again displayed. J 33 still lacked any place-names beyond the Italian peninsula, though some copies with them added elsewhere were later circulated. A draft of L 31 *Lugdunum* (R.

Lantier) was presented,¹⁰⁰ as were O 30 *Aberdeen* and the four sheets for Egypt (F 36 *Wadi Haifa*, G 36 *Aswan*, H 35 *Alexandria*, H 36 *Cairo*). These latter had just been issued, accompanied by a striking ‘Aegyptus’ cover sheet in colour, displaying index map, bilingual English/French key, and a border inspired by the Altar of Amemptus. The Commission also agreed on *Tabula Imperii Romani* as the official name of the project.

After this encouraging start, the British government hosted a conference in London on 23–25 September 1935. It had two broad aims: to place the international cooperation already achieved “upon an organized and permanent footing, and to secure for it official recognition and approval from the Governments of the countries interested”,¹⁰¹ as well as to stir the interest of countries which had not yet responded, but whose participation would be essential to completion. The second aim was to agree upon definitive regulations for the format and production of the maps, given that the provisional sheets had not attained a satisfactory degree of consistency. Delegates from more than a dozen countries attended. The working sessions were held at the Royal Geographical Society, presided over by M. N. MacLeod, the new Director-General of the Ordnance Survey (from February 1935).¹⁰² Generally speaking, arrangements in force were confirmed. But the scope of the project was enlarged by the addition of four more sheets (to total 56, which has remained the final figure).¹⁰³ The Congress formally resolved that the Central Bureau of IMW add to its functions the preparation of *TIR*, and that it be assisted by a permanent council of four members (Crawford, Bersu, Lugli and H. Seyrig), to which all queries, as well as proofs, should be referred in the interests of uniformity. The council was to issue recommendations for the general design of sheets.¹⁰⁴ In addition, “there should accompany each sheet a pamphlet containing a short commentary, bibliography, and index of names, together with a translation of the Latin reference table” (pp. 26–27). The pamphlet was to be published in Latin and in one of the five approved modern languages, *plus* (if desired) any other language chosen by the country responsible. The Congress expressed the hope that “the unanimous decisions taken on this occasion, whether on questions of archaeology or of cartography, will not be challenged at future international meetings” (p. 27). In his closing remarks (p. 28), MacLeod voiced concern about inadequate marketing of the maps once published, though it had earlier been acknowledged that discussion of advertising and sales might still be premature (p. 20).¹⁰⁵

In 1937 the Council, at Bersu’s suggestion, met quietly at Ptuj, Yugoslavia.¹⁰⁶ The main new item was the production of sheets K 34–35 and L 33–35, though no details are provided in the report.¹⁰⁷ A definitive version of L 31 *Lugdunum*, mostly conforming to the specifications of the permanent council, was ready for exhibition at the July 1938 IGU congress in Amsterdam.¹⁰⁸ The next year a

Council meeting was on the programme of the sixth archaeological congress in Berlin.¹⁰⁹ It was held on 22 August, but Crawford talks mostly of the risks entailed merely by attendance.¹¹⁰ Yet well before this he had become thoroughly frustrated by the project's lack of visible progress; he threatened to resign as secretary, and in 1938 passed the position to H. Nesselhauf, who in turn soon gave it up, leaving no successor.¹¹¹ Crawford's feelings are understandable: he was especially provoked by the Italians' failure to bring their sheets to publication in definitive form, though elsewhere perhaps he was being too impatient. True, the only sheet which had reached a sufficiently advanced stage for its publication to proceed after the outbreak of war was M 32 *Mogontiacum*—the second (with *Lugdunum*) of the 'definitive' sheets. Compiled by a former assistant of Bersu, P. Goessler, it generally conforms to the permanent council's specifications,¹¹² and is the first sheet to be accompanied by an annotated gazetteer. But M 33 was evidently ready for the printer shortly before the war,¹¹³ and early in 1939 it was reported that L 30 *Burdigala* (Lantier) "bientôt paraîtra".¹¹⁴ In addition, I 36, J 34, L 32 and L 33 had been commissioned, though how far work had advanced is unclear.¹¹⁵ World War II in fact devastated *TIR*. Work in progress was abandoned and for the most part never resumed. Stocks (and plates?) of the provisional sheets produced in Italy were destroyed.¹¹⁶ There was no longer a rôle for an archaeologist at the Ordnance Survey, and Crawford abandoned hope of ever reviving one when the Survey's library and his own books were lost in the bombing of Southampton on 30 November and 1 December 1940.¹¹⁷

In many respects his verdict that *TIR* had been a failure is correct.¹¹⁸ Yet the more positive side should not be overlooked. It was perhaps the most ambitious of his many projects while at the Ordnance Survey, and was not alone in being thwarted by the war. The great diversity of his interests and responsibilities inevitably acted to divide his attention and was a cause of weakness, as he well appreciated.¹¹⁹ Yet he devoted great energy to the project, and gained great satisfaction therefrom.¹²⁰ The Ordnance Survey gave it a remarkably generous level of support during a period of cutbacks which were the despair of successive Directors-General.¹²¹ Some other governments were supportive too, even if their interest was not confined to the advancement of scholarship. *TIR* certainly made an impact through its imaginative and wide-ranging exploitation of IMW, which no other mapping project ever matched. But above all, through *TIR* Crawford with his unusual range of expertise demonstrated the vital contribution that cartography could make to the work of classicists and related fields. As he said in 1933: "The technique of map production is a closed and uncut book to most historians; and the realm of history is one that the cartographer seldom has the time or even the desire to explore. Between the two professions, however, there is of course no

antagonism; there is merely lack of contact, and perhaps of any recognition that such contact might be mutually profitable”.¹²²

The revived *Tabula Imperii Romani* after World War II

After World War II, *TIR* still had a formal existence but little more.¹²³ Some scholars, in their enthusiasm to carry forward the aims of the project, resumed work independently. In 1950 the British Association prevailed upon the Society of Antiquaries to sponsor publication of H/I 33 *Lepcis Magna* and H/I 34 *Cyrene*, both issued in 1954.¹²⁴ The Society also sponsored a revision of G 36 (*Aswan*, now retitled *Coptos*), issued in 1958.¹²⁵ About 1950, on Lugli's initiative, work was taken up again from scratch on L 33 *Trieste*, which was finally published in 1961.¹²⁶ M 33 *Praha*, ready for the printer by 1939 but then damaged and even lost, was found again and issued in 1955 without revision. Its principal compiler B. Horák explained: “As we have not yet been informed of the continuation in the publishing of further sheets, the Cabinet of Historical Geography of the Czechoslovak Academy of Science has decided to publish the map independently, in its original form, therefore with a Latin nomenclature.”¹²⁷

As early as the first post-War UAI meeting in 1947, the question was raised of whether *TIR* might be attached to *FOR*.¹²⁸ At most subsequent UAI meetings a report was given about activities relating to *TIR*, though not until 1957 was UAI formally made its sponsor.¹²⁹ The abolition of *FOR* followed three years later, as mentioned above. By 1957 *TIR* was badly in need of a new sponsor. The link with the central bureau of IMW had been broken in 1951/52 when UNESCO authorized wider functions for the bureau and its transfer to the U.N. Cartographic Office in New York; IGU approved these changes. Yet for *TIR* it was not suitable either to be part of the transfer, or to revert to IGU, let alone to the Ordnance Survey.¹³⁰ Lugli's initiative in bringing *TIR* under UAI was therefore its salvation.¹³¹ Lugli was made president of the revived permanent council,¹³² to be succeeded by J. B. Ward-Perkins in 1967, E. Condurachi in 1981, and G. Carettoni in 1987, each of whom died in office. Carettoni has not yet been replaced. The project's progress since 1957 can be followed through the annual reports presented to UAI (Commission VIb). For all the efforts of UAI and associated scholars, the number of sheets actually published over the past 34 years has been disappointing: L 33 and L 32 (*Trieste* and *Milano*) in 1961 and 1966; L 34 and L 35 (*Budapest* and *Bucuresti*) in 1968

and 1969; K 34 (*Naissus*) in 1976, M 33 revised as *Castra Regina* in 1986; M 30–31 and N/O 30 (Britain and northern France) in 1983 and 1987. Apart from two provisional sheets, each partly superseded (*Drobeta* 1965, M 31 *Paris*, 1975), these eight represent the total published since 1960, and not all are still in print. Crawford would have been dismayed but hardly surprised at the reasons.

In hindsight the fundamental flaw has been the failure to rethink the project at the time of its revival (difficult though such an appraisal would have been to carry out, when the revival itself was challenge enough); too many problems were unresolved and have remained so. Several stem from the IMW sheet configuration. To slice the earth's surface into segments of 4° of latitude by 6° of longitude is cartographically logical for a world map-series, but the resulting sheets often fail to suit the mapping of the Roman empire by the modern nations involved. Equally, such sheets may not make coherent units in ancient terms. Of course, sheet-lines are unavoidable. Even so, IMW acts to split the south of Britain among four sheets, for example, and divides Sardinia and Euboea in half. In North Africa littoral and hinterland are constantly separated. The lower Danube winds around the dividing line between the L and K ranges of sheets. Such instances could be multiplied. Some modest shifts have been made by *TIR* in order to mitigate a few of the most unfortunate consequences (e.g. in Libya and southern Britain). A new provisional map (*Drobeta*, 1965) was drawn to show Dacia Inferior, which otherwise straddles four IMW sheets. Abandonment of the IMW configuration has been canvassed elsewhere too—especially in the Middle East,¹³³ also in Greece and the Iberian Peninsula.¹³⁴ But the problem has never been tackled as a whole, as is necessary for a set where most shifts must have a ripple effect. If the project had proceeded rapidly to completion, adherence to the IMW configuration would have mattered much less. But slow progress has served to highlight its limitations as a base for *TIR*.

More damaging to the completion of the project has been the fact that most IMW sheets take in territory of more than one modern nation, and often of several. UAI, like Crawford before, has sought to uphold the principle that each nation map its own area at its own expense (if a sheet spans more than one country the nation with the greatest area assumes responsibility). As an international union of academies UAI could hardly do otherwise, especially as it lacks resources of its own on the scale required for *TIR*.¹³⁵ But even during the 1930s it was difficult to arouse the interest of certain countries, and since the late 1950s the scale of the problem has grown. No longer can Britain and France, for example, take the initiative in much of the Middle East and North Africa, as was expected at the 1921 meeting.¹³⁶ Several nations whose participation is essential to the completion have given little support;¹³⁷ in any

case, they do not necessarily belong to UAI. In the case of Turkey, whose territory happens to be spread over eight IMW sheets, this inactivity is crippling.¹³⁸ International cooperation has proved equally troublesome. Crawford was persistently vexed by what he later termed “the absurd national jealousies which made it impossible for archaeologists of one country to collaborate officially with those of another”.¹³⁹ While apprehensive of such obstacles from the start, paradoxically he was candid about wishing to exploit nationalism to launch the project.¹⁴⁰ But there is little doubt that nationalism has done *TIR* more harm than good. In the case of L 34 *Budapest*, for example, it has been responsible for an inconsistent representation of the presence of Romans in Hungary and Roumania. Where international cooperation is needed to complete a map, it has sometimes led to delay or inaction. K 35 is a case in point. Turkey’s refusal to collaborate on it with Bulgaria and Greece even prompted a proposal that the map be issued with Turkish territory left blank.¹⁴¹ This was in fact done in the case of several provisional sheets during the 1930s.¹⁴² Even in 1961 Lugli had to express uncertainty about whether the compilation for part of Pannonia Superior (southern Hungary and northern Yugoslavia) shown on L 33 is complete.¹⁴³ When a sheet K 34 was about to be issued from Ljubljana with the title *Sofia*, Yugoslav authorities ordered the print-run destroyed and the sheet reprinted with the title *Naissus*.¹⁴⁴ At its 1990 meeting the Commission declared Israel’s failure to collaborate with Jordan and Lebanon unacceptable.

Some breaches of the principle of national responsibility have been authorized, although they too happen to have proved abortive. During the 1930s Crawford commissioned compilation of J 34 in England because he thought that Greece would lack the equipment necessary for bringing the sheet to publication, but later he was compelled to hand over responsibility to its academy.¹⁴⁵ During the late 1950s J 36 was to be compiled in England and published in Turkey, but the team of compilers abandoned work in 1985–86.¹⁴⁶

Despite the hope of the 1935 congress that its decisions on questions of archaeology and cartography would not be challenged, instead they have been ignored, and no fresh attempt to reach consensus has been made. Thus, the post-War sheets have little uniformity, and compilers have been unduly preoccupied with settling problems which ought to have been resolved by consistent central direction at the outset.¹⁴⁷ The range of topics for discussion at a meeting as late as 1970 is disturbing—“problèmes de l’échelle, des symboles cartographiques, du texte, de la repertition des diverses feuilles et du partage des responsabilités”.¹⁴⁸ Temples and other monuments sited in or near towns, whose omission had been fixed in 1929, come to be marked all the same. So do provincial boundaries, despite the decision of 1932; in the case of L 34 that meant cluttering a crowded part of the map with a red boundary line drawn

along the winding course of the Danube. The provisional sheet M 31 *Paris* marks several types of minor detail, such as coin finds, some of which the overlapping definitive sheet M 30–31 omits. Most remarkable is definitive M 33 *Castra Regina*: because the area lies largely outside the empire, the compilers aimed to plot finds of Roman goods and coins north of the Danube. Two further base maps and enlargements (between pp. 94–95) are supplied for this purpose: the finds are subdivided by type (glass, metal, single coins, hoards, etc.), and numbered for cross-reference to the gazetteer.¹⁴⁹ All of this helps shed light on relations between Rome and the peoples to the north but it goes well beyond the scope of *TIR*.

Adherence to the uniform scale of 1:1,000,000 has been a matter for comment ever since Lugli drew attention to the difficulties for K 33 *Roma*. He and others felt this keenly since standard practice at the Istituto Geografico Militare and at the Ordnance Survey was to work initially at 1:500,000 and scale down later.¹⁵⁰ The problem surfaced again in 1989 with reference to coverage of Israel. There never seems to have been a full discussion of balancing the gain of providing more details for well-researched areas against potential damage to the series as a whole. Any enlargement of scale, after all, threatens its integrity and uniformity. The sheet configuration is affected, different bases are required, and the extra number of maps to be produced is liable to multiply alarmingly: with two dimensions to consider, halving the scale quadruples the coverage.¹⁵¹ Even then, selection of material for inclusion will still be needed. This is an essential part of map-making and cannot be avoided, however painful scholars may find it.

There was also pressure from an early stage to make *TIR* more scholarly, despite Crawford's insistence that it should be "as clear and simple as possible". In some respects this pressure was justified. It was necessary to proceed beyond the blatantly 'Bradshaw'-like representations of 'empty' areas, as seen on some of the earliest sheets.¹⁵² By 1935 Crawford supported the accompaniment of each sheet by "a pamphlet containing a short commentary, bibliography and index of names". From M 32 *Mogontiacum* onwards, however, compilers have generally sought to produce a very substantial, fully annotated gazetteer (in one language), with town plans, area diagrams, and other accessories. Maps are folded and enclosed (loose in a pocket, or glued) at the back, rather than issued as flat sheets. All this has resulted in the kind of delay that Crawford wished to avoid. Attention to documentation has held up completion of the maps themselves or (as with M 31 *Paris* [1975]) even led to preparation of no more than a provisional sketch. At least Crawford would have approved of Condurachi's rejection of the plea that further excavations were necessary (in Turkey) before mapping should start.¹⁵³

So great have been the delays that the specifications for IMW, the base map,

have undergone changes, in particular a change of projection agreed in 1962.¹⁵⁴ Observance of these changes by the authorities responsible for individual sheets has varied, as usual. So has the frequency with which sheets may have been revised. The effect is that IMW sheets have become a motley, no longer matching one another in style or coverage, with the result that they can no longer be considered a suitable base for *TIR*.¹⁵⁵ Since World War II five maps compiled in Britain and one each in Roumania and France have set IMW aside. More departures are inevitable when nations have increasingly abandoned their participation in IMW, relying instead upon the Operational Navigation Chart at the same scale,¹⁵⁶ the adoption of which for *TIR*'s base was even suggested in 1973.¹⁵⁷ As a series IMW is now defunct, and the necessary base elements for *TIR* likely to be no longer available or unusable. It is thus time to question whether Crawford's bold scheme can ever be completed. Its reliance upon national initiative has proved inadequate for progress to be made, while any coordinator has insufficient power to exert firm control or even to overcome the long-standing weakness of the marketing of the series.¹⁵⁸ In practice, *TIR* has, unintentionally, come to resemble *FOR*. Important elements common to all the maps remain, to be sure, and the individual sheets have value, but each is an independently-executed piece in a jigsaw that could now no longer fit together and which, realistically, will not be finished.¹⁵⁹ Much good work has been done (though much sadly not brought to publication). In retrospect a fresh start would have been preferable: as Crawford himself reflected, "the only way to carry out such a scheme is to entrust it to a central body with adequate funds and to make it the whole-time job of a properly qualified person".¹⁶⁰ As it is, the continuation of the revived *TIR* may have served to discourage others from trying to map the Roman empire more effectively.

Tabula Imperii Byzantini (TIB)

Two important projects started during the 1960s each contribute to the existing need, though they are primarily designed with other goals in mind. The name and purpose of *Tabula Imperii Byzantini* were consciously derived from *TIR*.¹⁶¹ The project was initiated in 1966 by H. Hunger, who remains director, with support from the Österreichische Akademie der Wissenschaften. *TIB* and its related monograph series¹⁶² are designed to span the 4th to 15th centuries and to cover a wide expanse. Forty maps were initially envisaged within the area latitude 50° N to 20° N and longitude 10° W to 50° E.¹⁶³ No index map has yet appeared. Six maps ranging in size from 16.5" × 15 to 22" × 28 have appeared,

with five more announced. The total price of the former (each with annotated gazetteer) is DM 916. Each map has its own focus on an *eparchia* or *thema*, but there is an exceptional degree of overlap between adjacent sheets. A later overlapping sheet must be checked because it may add to what was marked in the overlap area in the first instance.¹⁶⁴ All six sheets are on a projection specially devised for the most suitable representation of regions at or near Mediterranean latitudes. All are at the unusual scale of 1:800,000. The preparation of new base maps has of course been required: this has been done from published materials.¹⁶⁵

TIB is outstanding for the care with which it has been designed. *TIR* was willing to leave many matters to be determined while work proceeded, but *TIB* is not. Features such as symbols, colour coding, transcription of Greek, and so on, were all fixed and explained at the outset. Consistency of presentation has been maintained. This is due in part to another notable difference from *TIR*—the employment of a single small team, supported by state funds but not a state with territorial or other claims on any part of the area to be covered. The team is working slowly though methodically to determine the topography of different parts of the Byzantine world in succession. It has not confined itself to examination of written materials (ancient and modern) but does extensive exploration in the field, as is impressively documented by the annotated gazetteers. That is appropriate for the project. In the case of the Roman empire it was in fact reasonable to stipulate that compilers confine themselves to current knowledge which, even though uneven and incomplete, is sufficient to justify a map-series. For the Byzantine world, where research had lagged, the more time-consuming approach is justified.

It may however be asked whether *TIB* presents its compilers' findings in the most effective or attractive manner. Much care and expense have been incurred to create the base maps, of which two versions accompany each volume (folded loose in an end-pocket). One sheet printed in clear inks shows today's physical and cultural features; the other reproduces these as a subdued background in pale inks, over which are printed Byzantine places, roads, and other features. For relief, the 'modern' base includes shading, spot-heights, and 200-metre contour lines, although in the absence of tints the contours are hard to read. The 'modern' base naturally includes features such as railways and airports, together with many place-names, the lesser ones in very tiny cursive letters of which Grundy would have disapproved. Features on the 'modern' base appear faint on the 'Byzantine' sheet, as intended, but inconveniently faint. Symbols are well chosen and not too numerous, but most are unduly large in relation to the importance and extent of the feature. Some such exaggeration is unavoidable, but a map loses value when the large symbol used for a small place makes it impossible for the user to appreciate its location in

the landscape. In *TIB* it is common to find a village or monastery symbol straddling three or four contour lines. The painstaking research might have been better served by taking a physical base from an existing series at a larger scale,¹⁶⁶ reducing overlap and attempting to recreate the Byzantine, not the modern, landscape, as far as possible. Users who wish to set Byzantine features against modern ones could then refer to the sheet in the series used as a base. As it is, modern names are placed on the *TIB* base when they do not always assist an understanding of the Byzantine evidence, and the base becomes unnecessarily crowded. While modern names and features can help the traveller find sites, the scale adopted remains too small for these maps alone to serve for exploration on the ground. Perhaps also *TIB* has misjudged the degree of detail which a map can usefully provide about the periods when a site was occupied. The span covered is divided into four periods plus four combinations of periods and a “period of occupation unknown”. This variety is conveyed by the use of seven colours, plus white, plus underlines. Such a wide range of colours, in addition to those already reserved for physical features, must partly explain why the symbols have to be large—otherwise the printer may not be able to set one ink on another with sufficient accuracy. But the typical user may not be able to recall the code accurately; most need to make frequent reference to the key. A narrower range of chronological indicators might have been more effective, with refinements given in the accompanying text. As it is, roads are not given colour coding.¹⁶⁷

Tübinger Atlas des Vorderen Orients (TAVO)

This is the second current project contributing to the mapping of the classical world, published by Reichert, Wiesbaden. It was initiated in 1968 with funding from the Deutsche Forschungsgemeinschaft as a special research division for the region from Turkey to Afghanistan, and as far south as Sudan. W. Röllig has been director since 1972. There are two parts, geographical (A) and historical (B).¹⁶⁸ Monographs¹⁶⁹ and technical supplements¹⁷⁰ relating to each are issued, but the centrepiece is the atlas which is planned to comprise nearly 300 folio map sheets, issued loose in batches of about a dozen twice a year. Twenty-one such *Lieferungen* had appeared by the end of 1990; the atlas is due to be completed within the next two years. A gazetteer in several volumes is planned to follow. An individual map sheet may be purchased today for DM 26, or a subscription price of DM 22 paid, which would bring the total for the completed atlas to about DM 6,000.

Each of its two parts is divided into ten sections. Those of part A deal

primarily (though not exclusively)¹⁷¹ with modern conditions—relief, geology, geomorphology, climate, hydrogeography, vegetation, natural regionalization, economic and social structures (population, settlement, economy, communications). In part B the sections are divided chronologically from earliest settlement to the 20th century A.D. Three sections in B relate closely to Greece and Rome (IV: the first millennium down to the time of Alexander the Great; V: Hellenism and the Roman periods; VI: Late antiquity). A total of 64 maps is planned for these three sections together; about half have appeared. Most, though not all, relate to government or warfare, and inevitably the coverage given to different areas is not uniform (more attention is devoted to Palestine than to Egypt).

Each map (many with insets) measures up to about 22" wide by 17.25 high: a substantial key in German and English occupies the rest of the folio sheet. Although the atlas itself offers no other text, further discussion of several maps is found in the monograph series. Map presentation is characteristically in a blaze of strong colours.¹⁷² The same outline of the region, or principal parts of it, is used wherever possible to assist orientation, as well as comparison between sheets; territory occupied by each of the leading powers is shown in a standard colour.¹⁷³ Because of the expanses to be covered, scales are generally very small, so that a special projection has been developed which eliminates the earth's curvature. In B IV-VI scales of 1:4,000,000 and 1:8,000,000 occur most often. At such scales it is practicable only to give the most rudimentary sense of relief.¹⁷⁴ It remains a disappointment that so large a work nowhere offers maps which give a closer rendering of the physical landscape or of topography in detail, but that was never the intention.¹⁷⁵ Compilation of the maps reflects the highest scholarly standards, yet sometimes the result is so thorough as to be over-complex: the user may feel bewildered rather than enlightened.¹⁷⁶ The use of very large symbols (often even larger than those of *TIB*) reduces the significance of the geographic background, and certain areas can be almost wiped out by the symbols overlaying them.¹⁷⁷

It was always intended that, as loose sheets issued flat, *TAVO* maps should wear better than folded ones (like *TIB* and most post-War *TIR* maps), and be convenient to use and set beside one another. This is indeed the case. A bound atlas would be even more durable and accessible, although in this instance it is true that only a minority of users would need to consult the full range of maps with any frequency. For such users, and for most libraries, however, the price is so high as to put it out of reach.¹⁷⁸ In a practical sense, therefore, the project is thwarted if its results cannot be widely disseminated, and one wonders whether many of the historical maps in particular would have suffered seriously if they had been produced in a less lavish style.

Atlas of the Greek and Roman World in Antiquity

Lastly, notice may be taken of this work, edited by N. G. L. Hammond and published by Noyes Press, N.J., at \$48 in 1981. It reflects a sound appreciation of the need for such a work, and admirable initiative in carrying it through to completion despite considerable difficulties. It offers 30 pages of maps on a 10.75" wide × 15.75 page size. The care and scholarship of the 35 compilers are not in question. To this significant extent Hammond's claim that his volume is an "up-to-date, detailed and scholarly topo-graphical atlas" holds true. Where it falls short is in its design as a classical atlas: no text beyond a brief preface accompanies the volume, so that there is little discussion of its notable features, let alone explanation for individual maps.¹⁷⁹ Despite the large page-size scales remain very small, and no map extends to form a double spread. Regions are in fact shown smaller even than in *Murray's Handy Classical Maps*—generally not sufficient to do justice to late 20th-century topographic knowledge of antiquity. The norm is a scale of 1:5,000,000 or 1:4,300,000 (65–77 miles to the inch). Greece and Italy are shown at a uniform scale but still at 1:1,500,000 (about 23.5 miles to the inch), and the regions of Greece are split inconveniently. Paradoxically, map 12 includes an inset of the Propontis at a smaller scale (1:2,500,000), not a larger one. Use of colour is very restricted. There are altitude tints (six on the larger scale maps, four on the smaller, all different shades of brown) but no contours or spot-heights. At such small scales contours would be out of the question, but in any case the impression of relief is not clear. Two major reasons for the small scales of the regional maps must be the very long time span covered (neolithic to 6th century A.D.) and Hammond's wish to devote a substantial proportion of his 30 pages to historical maps, city plans, battle sketches, and the like. The result is an idiosyncratic mix of the type that Smith reacted against when contrasting Spruner/Menke's atlas with his own—namely, representation of regions has to be restricted to accommodate an incomplete (and infinitely extendable) set of historical maps. One striking element of imbalance here is the omission of all Roman battles, and allocation of as much space to Marathon and Salamis (map 8a) as to the Persian wars (map 7b) or Alexander's empire (map 11a)—and the sketches of those two battles surely require some expository text. Explanation is also needed for the choice to mark modern main roads (but not place-names) as well as ancient ones on the topo-graphic maps of Greece and Italy.¹⁸⁰ It is odd to find ancient Rome surrounded by the Grande Raccordo Anulare.¹⁸¹ While the individual maps are useful, together they do not comprise a well-conceived classical atlas. Financial difficulties which required a change of publisher in mid-stream may of course be largely to blame. But Hammond

seems not to have considered adequately what was called for by a classical atlas beyond the level of a textbook, especially an atlas of the quality that he claimed. This is hardly surprising, perhaps, when the issue has not been seriously discussed for decades. Yet, except for Grundy, Hammond seems equally unaware of his predecessors' approaches in the late 19th century.

Conclusions

It is plain that a major classical atlas would be invaluable for reference, research and teaching. The absence of any serious attempt to create one during this century has left classicists largely unaware of cartography and its potential contribution to their understanding of antiquity. Hammond's atlas, which is the best currently available for many, has definite merits. But it leaves the unfortunate impression of taking a step backward from Smith's atlas rather than reflecting 20th-century advances in cartography and classical studies. The next major classical atlas must be planned not only with a better awareness of the progress or lack of it since 1874, but also with careful attention to identifying the most suitable scope for such a work and the means by which modern cartography can fulfil it.

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Appendix 1

Forma Orbis Romani

Although national and regional mapping projects lie outside the scope of this article, some brief clarification of *FOR* seems required. The heading reflects a concept: it does not denote any series in the normal sense of the term. UAI

Compte Rendu 1969, p. 418, sums up its nature: “Il s’agit principalement de catalogues archéologiques accompagnés de cartes topographiques, et qu’ils ont nécessairement une échelle plus détaillée.” Series asterisked below are included in the latest UAI listing of *FOR* and *TIR*, available only in the separately published (supra n. 66) *Compte Rendu* 1981, 175–84. Work with the *FOR* concept in mind has been done most fully in Italy and France. In both, mapping schemes of this type had been proposed by the 1920s, and the formulation of *FOR* acted to encourage their implementation.¹⁸² The first volume of **Forma Italiae* appeared in 1926, and the series continues.¹⁸³ G. Lugli’s *Prefazione* to vol. I,1 explains the aim as documentation in text, drawings, plans, photographs and maps of all the antiquities of an area into the Middle Ages. The scale of 1:50,000 was envisaged as standard, but with the understanding from the outset that considerably larger or smaller scales might be adopted where appropriate. Lugli anticipated use of 1:25,000 for “le regioni più ricche di monumenti” and 1:100,000 “nelle località montuose e palustri” (p. III). In fact, 1:25,000 has turned out to be the most frequently used. Except where plans are specially drawn, the standard method of mapping at all scales has been to overprint ancient data in red on the relevant uncoloured sheet of the *Carta d’Italia*. Lugli’s *Prefazione* opens with a specific reference to *FOR*, but no volume carries that heading. Nor do other Italian series of comparable type, such as the **Edizione archeologica della Carta d’Italia al 1:100,000 (Carta archeologica d’Italia)*, or *Italia romana–municipi e colonie* (1939–55).

In France, under the sponsorship of the Académie des Inscriptions et Belles-Lettres and later jointly with the CNRS, a **Carte archéologique de la Gaule romaine* was directed for over 30 years (from the late 1920s) by A. Blanchet. Until *FOR* was abolished in 1960, the volumes all carried that heading. They are similar to those of *Forma Italiae*, although the maps have the standard scale of 1:200,000 (IGN series overprinted). For a brief account see A. Blanchet, “Tabula imperii romani,” *Bulletin de l’Association Guillaume Budé* 34 (1932): 44–49. Subsequently Blanchet maintained that a scale of 1:50,000 or 1:80,000 was his ideal, but he grudgingly conceded that even the latter would have required 267 sheets.¹⁸⁴ As it was, only 16 of the projected 81 volumes appeared (1931–81); for a complete listing, see the frontpaper of vol. XVI, *Corrèze*. As a successor to this series, there has been appearing since 1988 a *Carte archéologique de la Gaule* edited by M. Provost (also sponsored by the same Académie). It ranges from the beginning of the Iron Age to the high Middle Ages. One volume is planned for each of France’s 95 *départements*. Each volume has included a black-and-white sketch of the *communes*, but otherwise no map accompanies the very full listing of places and other information.

Elsewhere, various national series have presumably been prepared with an awareness that they fit the concept of *FOR*, though none uses that heading.

They include:

J. de C. Serra Ràfols, **Forma conventus Tarraconensis: fasc.1, Baetulo-Blanda* (Barcelona, 1928) [prepared with *FOR* and the first volume of *Forma Italiae* explicitly in mind. A provisional black-and-white sketch map at 1:150,000 follows the gazetteer. No further fascicules were published, though a second was compiled: see UAI *Compte Rendu* 1957, 263–64, and 1958, 295.]

**Archaeologische Karte von Jugoslavien 1936–1939* [5 modern map sheets at 1:100,000 overprinted; annotated gazetteer. See *L'Année philologique* 1938, 372; 1942/44, 327.]

**Carta arqueologica de España 1941*–[incorporating only outline maps. For a review of the fitful progress of the project see M. Almagro Basch, “Prologo” to *Teruel* 1980.]

Carte archéologique du Grand-Duché de Luxembourg 1973–[modern IGN/Luxembourg map sheets at 1:20,000 overprinted; annotated gazetteer. 12 fascicules issued so far. On the intended nature of the series, see C. M. Ternes, “Pour une carte archéologique du Grand-Duché de Luxembourg,” 201–207 in R. Chevallier (ed.), *Colloque international sur la cartographie archéologique et historique* (Paris 1972).]

I have not seen the three volumes for Roumania (*Oropoi, Constanza, Croiava*) reported to UAI (*Compte Rendu* 1981, 427) as published, but giving no further details.

Forma Belgica seems never to have achieved publication: it was planned to consist of a map at 1:320,000 and “un répertoire statistique et bibliographique” of about 400 pages (see UAI *Compte Rendu* 1938, 258; 1939, 36).

Appendix 2

Note: The following lists are offered only as a basic guide to the principal contents of any work or sheet. The descriptions make no claim to be full, nor are precise titles necessarily given.

W. Smith and G. Grove (eds.), *An Atlas of Ancient Geography Biblical and Classical* (1872–74)

[Scales are sometimes not given. Numbering is by maps (each 2 pp. unless stated). Asterisk denotes accompanying gazetteer. Maps 1–9, 11–30, 32–33 were compiled by C. Müller, map 10 by E. Weller, map 31 by H. Yule.]

- 1 Geographical systems of the ancients (12 maps)
- 2 The world as known to the ancients
- 3 (1 p.) Empires of the Babylonians, Lydians, Medes, and Persians (1:14,400,000)
- 4 (1 p.) Empire of Alexander the Great (1:12,000,000)
- 5 (1 p.) Kingdoms of the successors of Alexander the Great, I (3 maps)
- 6 (1 p.) Kingdoms of the successors of Alexander the Great, II (2 maps)
- 7 (1 p.) The Roman empire in its greatest extent (1:12,000,000)
- 8 (1 p.) The Roman empire after its division into the eastern and western empires (1:12,000,000)
- 9 Greek and Phoenician colonies (1 large map, 4 smaller, 3 insets)
- 10* Britannia. Inset: map of the Roman wall
- 11* Hispania (1:2,500,000)
- 12* Gallia (1:2,500,000). Inset: Gallia at the time of Caesar
- 13* (1 p.) Germania, Rhaetia, Noricum (1:3,700,000)
- 14* (1 p.) Thracia, Moesia, Illyria, Pannonia, Dacia (1:3,950,000). Inset: Bosporus Thracius (1:200,000)
- 15 [Seven] historical maps of Italy. Sardinia, Corsica (both at 1:1,500,000)
- 16 Italia superior (1:1,200,000)
- 17* Italia inferior. Sicilia (1:1,200,000) [Index is to 16 and 17]
- 18 (1 p.) Plan of Rome in the times of the emperors (main map at 1:20,000; three at smaller scales)
- 19 (1 p.) Environs of Rome (1:240,000)
- 20 (1 p.) Greece after the Doric migration (+ 2 smaller maps)
- 21 (1 p.) Greece at the time of the Persian wars (1:2,500,000)
22. (1 p.) Greece in the beginning of the Peloponnesian war (1:1,333,333)
23. (1 p.) Greece at the time of the Achaean and Aetolian leagues (1:1,333,333)
- 24* Northern Greece–Hellas, Epirus, Thessalia, Macedonia (1:1,000,000)
- 25* Central Greece–Attica, Boeotia, Locris, Phocis, Doris, Malis (1:400,000). Six insets relating to Athens/Attica
- 26* Peloponnesus (1:500,000). Plan of Sparta
- 27* Coasts and islands of the Aegean Sea
- 28 [Four] historical maps of Asia Minor
- 29* Asia Minor (1:2,500,000)
- 30* (1 p.) Arabia and Aethiopia (1:10,000,000)
- 31* (1 p.) India (1:10,000,000). 3 insets

- 32* Northern Africa [2 maps, each half-height double spread at 1:3,300,000]
- 33* Aegyptus (1:2,000,000). Inset: Aethiopia supra Aegyptum
- 34 The Holy Land at successive periods (8 maps)
- 35 The Holy Land—northern division
- 36* The Holy Land—southern division [index is to 35 and 36]
- 37 Jerusalem, ancient and modern (1:4,874)
- 38 (1 p.) Environs of Jerusalem
- 39* Sinai and the desert of the wanderings (1:950,400). 2 insets
- 40* Part of Asia, to illustrate the Old Testament and classical authors
- 41 Part of Europe and Asia, to illustrate the New Testament
- 42 (1 p.) Plan of Babylon (1:253,440)
- 43 (1 p.) Plans of Nineveh, Troy, Carthage, Alexandria and Constantinople
[No compiler's name given].

Murray's Handy Classical Maps

[These booklets are never numbered or (except for "Asia Minor") dated. Publication dates, where known, are derived from the John Murray archive. Early listings include "Asia Minor and Mare Aegaeum" and "Egypt and the Eastern Empires": subsequently the Aegean and Egypt were removed to form a separate booklet with other material.]

Murray's Small Classical Atlas

(1st ed., December 1904) [all double spreads, most maps have 4 tints]

- I. Empires of the Babylonians, Lydians, Medes and Persians (1:14,400,000)
- II The Roman empire B.C. 218–A.D. 100 (1:12,000,000)
- II. The Roman empire A.D. 1–300 (1:12,000,000)
- III. Britannia [scale not given; approx. 31 miles to the inch]
- IV. Hispania (1:3,700,000)
- V. Gallia (1:3,800,000)
- VI. Danubian provinces of the Roman empire (1:4,900,000)
- VII. Italia [+ Sicily, Sardinia, Corsica] (1:3,500,000)
- VIII. Egypt [tiny scale]; Rome and Latium [small]; Rome in the time of the emperors (1:30,000); Rome during the republic; Roma quadrata; ancient Rome; modern Rome; environs of the Forum Romanum
- IX. Graecia [scale not given; approx. 21 miles to the inch]

- X. Aegean Sea (1 p.); Athenae; Piraeus; Acropolis; Propontis
- XI. Asia Minor [scale not given; approx. 60 miles to the inch]
- XII. The principal battlefields in Greek and Roman history [14 small maps]
- XIII. Palestine [scale not given; approx. 10.5 miles to the inch].

W. Sieglin, *Atlas antiquus: Atlas zur Geschichte des Altertums*

[All double spreads. In each case, title and key are in Latin. There is no gazetteer or text, except for publisher's foreword (2 pp.), and list of contents (2 pp.), both in German. Publication dates are given; maps dated 1909 are compiled by M. Kiessling.]

- 1 1893 The world according to ancient geographers (6 maps)
- 2 1893 The world as known in the second century A.D. The Peutinger Table
- 3 1893 Egypt (1:3,750,000)
- 4 1894 Palestine and Phoenice (2 single-page maps, one at 1:1,250,000, the other [Judaea] at 1:625,000)
- 5 1893 Palestine from King David to Hadrian (8 maps)
- 6 1895 Euphrates to Indus (1:7,500,000)
- 8 1893 Persian empire under Darius I—development and administration (2 maps each at 1:15,000,000)
- 9 1895 Persian empire before and after Alexander's conquest (2 maps each at 1:15,000,000)
- 10 1895 Kingdoms of Diadochi and Parthians (6 historical maps)
- 14 1909 Aegean Sea in fifth century (1:2,500,000)
- 15 1909 Greece in the fifth century (1:1,125,000)
- 16 1909 Greece: Attica/Boeotia/Phocis at 1:750,000 plus 15 other city/regional maps at various scales
- 17 1894 Greece in the fifth century—4 maps each at 1:4,500,000: Persian wars, Athenian empire, 431 B.C., 404 B.C.
- 18 1909 Greece in the fourth century—4 maps each at 1:4,500,000 relating to 386, 372/1, 361, and 338 B.C.
- 20 1895 Mauretania, Africa, Cyrenaica—2 main maps, the east at 1:9,000,000, the west at 1:3,000,000
- 21 1894 Northern Italy (1:1,750,000)
- 22 1895 Southern Italy and Sicily (1:1,175,000). Inset: Sardinia (1:2,125,000)
- 23 1895 Rome (main map is a plan at 1:20,000)

- 24 1893 Italy before the second Punic war (9 maps)
- 25 1893 Italy after the second Punic war (4 maps)
- 26 1895 Roman empire—2 maps: To Caesar's time; under Augustus
- 27 1895 Roman empire—2 maps: Trajan/Hadrian; Diocletian
- 28 1894 Spain (1:3,500,000). Inset: Baetica (1:2,500,000)
- 29 1893 Development of Spain from the arrival of the Carthaginians to the fourth century A.D. (9 maps)
- 30 1893 Britain and Ireland (1:3,500,000). Insets: walls of Hadrian and Antoninus (both 1:700,000)

Announced but never published

- 7 Historical development of Assyria and Babylonia (5 maps)
- 11 Asia Minor under Persian rule (ethnographic overview)
- 12 History of Asia Minor from Croesus to the end of the Pergamene kingdom (6 maps)
- 13 Asia Minor under Roman rule (6 maps)
- 19 History of Greece under the Diadochi and the Romans (6 maps)
- 31 Gaul in the second century A.D.
- 32 History of Gaul (5 maps)
- 33 Germany in the first and second centuries A.D.
- 34 Macedonia, Thrace, Illyria, Dacia; 3 maps on Balkan history under the Romans.

Corpus Inscriptionum Latinarum

Regional maps by Heinrich Kiepert. Single-page unless otherwise stated. Many maps are pull-outs; in some such instances, the number of 'pages' to which they extend is an approximation.

- 1869 vol. II Hispania (2 pp., 1:3,000,000); Baetica (2 pp., 1:1,500,000) + 3 maps of areas of special significance
- 1873 III.2 Imperii Romani Pars Graeca [spans R. Danube to Petra] (2 pp., 1:5,000,000); Dacia (2 pp., 1:1,500,000); Dalmatia (2 pp., 1:1,200,000); Raetia, Noricum, Pannonia (3 pp., 1:1,500,000)
- 1873 VII Britannia (1:2,500,000) + insets of the walls of Hadrian and Antoninus (both 1:500,000)
- 1877 V.2 Italiae regio X: Venetia et Histria (2 pp., 1:800,000); Italiae regiones IX Liguria et XI Transpadana (2 pp.,

- 1:800,000)
- 1881 VIII.2 Provinciae Africae pars meridionalis (1:4,000,000); Ager Capsitanus et Tacapitanus (1:1,500,000) [top and bottom of same page]; Provincia Africa (3 pp., 1:1,000,000); Mauretania (2 pp., 1:1,500,000)
- 1883 IX Viae publicae Italiae mediae et inferioris (1:2,500,000) [reprinted as the first map in X.2 below]; Italiae regio II (2 pp., 1:1,000,000) + inset of the territory of the Hirpini (1:500,000); Italiae regio IV (2 pp., 1:500,000); Italiae regio V (1:500,000)
- 1883 X.2 Italiae regio III (1:1,000,000); Italiae regio I (2 pp., 1:500,000); Sicilia (1:1,000,000); Sardinia (1:1,000,000) + inset of Corsica (1:2,000,000)
- 1887 XIV Latium vetus (2 pp., 1:200,000)
- 1888 XII Gallia Narbonensis a sinistra Rhodani (2 pp., 1:1,000,000); Vallis Rhodani inferior 1:500,000); Gallia Narbonensis inter Rhodanum et Garumniam (1:1,000,000)
- 1892 II Supplementum Hispaniae pars occidentalis (2 pp., 1:2,000,000); Baetica (1:1,200,000); Hispaniae pars orientalis (2 pp., 1:2,000,000)
- 1902 III Supplementum (in each case “Formam descripsit Henricus Kiepert, supplevit Ricardus Kiepert”) Aegyptus et partes Aethiopiae et Arabiae (1:7,000,000); Syria et Arabiae pars (1:2,400,000); Asia Minor + Cyprus (3 pp., 1:2,250,000); Achaia, Epirus, Macedonia [small scale, not specified]; Moesia et Thracia Septentrionalis (2 pp., 1:1,500,000); Dacia (2 pp., 1:1,500,000) + inset of area between Sarmizegetusa and Apulum (1:750,000); Dalmatia (3 pp., 1:1,000,000); Pannonia (2 pp., 1:1,000,000); Noricum et Raetia (3 pp., 1:1,000,000); Illyricum antiquum (1:6,000,000) [spans eastern Gaul to Byzantium]

Note also in connection with *CIL* the following three maps in *Ephemeris Epigraphica*, the first by Heinrich Kiepert, the other two by Richard:

EphEpi 5 (1884) Africa cum parte Numidia (to illustrate discoveries 1881–84) (1:1,000,000, mis-printed as 1:100,000)

EphEpi 7 (1892) Africa cum parte Numidia (to illustrate discoveries 1884–88) (1:1,000,000; extends further south than 1884 map); Pars viae publicae Carthagine Thevestem (1:300,000).

H. [and R.] Kiepert, *Formae Orbis Antiqui*

[All double spreads. In each case title and key are in Latin; no gazetteer. Text pages are in German except where stated. Dates given are as on the maps; in some instances publication was a year later. Title and/or date on a map may differ slightly from what appears in the corresponding text.]

- 5 1910 Syria, Mesopotamia, Assyria, Armenia (1:2,200,000) + 9 pp.
- 6 1911 Palaestina (1:600,000) + 6 pp. Inset: Hierosolyma (1:20,000)
- 7 1908 Asia Minor and Black Sea prior to 188 B.C. (1:3,000,000) + 4 pp.
 Insets at larger scales: Mycale, Bosphorus Cimmerius, Chersonesus
- 8 1909 Asia Minor and Cyprus under Trajan (1:2,200,000) + 20 pp. Inset:
 southern Caria (1:1,000,000)
- 9 1894 Asia provincia (1:1,200,000) + 8 pp. in English and German
- 10 1908 Greek and Phoenician colonies (1:9,000,000) + 3 pp.
- 12 1893 Aegean islands (1:900,000) +1 p. in English and 2 pp. in German
- 13 1906 Peloponnese and Attica (1:600,000) + 6 pp. 7 insets
- 14 1906 (top half) Phocis, Boeotia, Attica (1:400,000); (bottom half) Athens
 (1:12,500) and 7 insets + 8 pp.
- 15 1894 Northern Greece (1:600,000) + 3 pp. in English and in German
- 16 1908 Greece, Macedon, Epirus in 270 B.C. (1:1,200,000) + 10 pp.
- 17 1894 Illyricum and Thrace (1:2,500,000) + 6 pp. in English and in
 German. Inset: Bosphorus Thracius (1:250,000)
- 19 1901 Southern Italy with islands (1:1,600,000) + 5 pp.
- 20 1901 Central Italy (1:800,000) + 8 pp. Inset: Environs of Rome (1:400,000)
- 21 1904 Republican Rome (1:15,000); Southern Italy and Sicily during 8th
 to 5th centuries B.C. (1:2,000,000) + 4 pp. on Rome only
- 22 1903 Rome from Augustus to Honorius (1:15,000) + 4 pp. Detail of
 central area at 1:5,000
- 23 1902 Northern Italy and the Alps (1:1,600,000) + 11 pp.
- 24 1914 (top half) Germany in the second century A.D. (1:3,000,000);
 (bottom half) Gaul in the Time of Caesar, and of Augustus (smaller
 scales) + 2 pp.
- 25 1913 Gaul in the second and third centuries A.D. (1:2,500,000) + 3 pp.
- 26 1893 British Isles (1:2,500,000) + 2 pp. in English and 3 pp. in German
- 27 1893 Hispania (1:2,500,000) + 2 pp. in English and in German. Inset:
 Conventus districts of Roman Spain
- 33 1911 Roman empire to Hadrian's time (1:10,000,000) + 1 p.
- 34 1912 Roman empire under Diocletian (1:9,000,000) + 2 pp.
- 35 1911 Ptolemy's Europe (1:10,000,000). No text
- 36 1911 The world according to Ptolemy (1:35,000,000). No text

Announced but never published

- 1 The known world in ancient times (ethnographic)
- 2 Persian empire under Darius I

- 3 Alexander's empire
- 4 Kingdoms of the Diadochi
- 11 Greece in Archaic times and during the Peloponnesian war
- 18 Italy in Archaic times and during the Punic wars
- 28 Africa Provincia. The Punic empire
- 29 North Africa from Mauretania to Cyrenaica
- 30 Egypt
- 31 Arabia and East Africa
- 32 India and East Asia.

***Tabula Imperii Romani*—International Map of the Roman Empire**

[A fuller account of some particulars is provided by Hellyer (*supra* n. 79), pp. 129–30 (where “Cpt” = “available in U. K. Copyright libraries”). Except for the index map, his list now replaces that of A. L. F. Rivet, “The present state of the *Tabula Imperii Romani*,” *JRS* 74 (1984): 200–201. All maps at 1:1,000,000.

In the entries information is given in this order: date of publication; sheet title (conventions were agreed upon after much debate, but not necessarily observed); base map (IMW North unless otherwise stated); (chief) compiler; sponsor or publisher.]

Provisional sheets

[Only the two latest (*Drobeta* and *Paris*) are accompanied by annotated gazetteers.]

- 1930 *Edinburgh* N 30 [Crawford] Ordnance Survey
- [1931] *Porto* K 29 Proof only. Unattributed. Instituto Geográfico y Catastral
- [1931] *Madrid* K 30 Proof only. Unattributed. Instituto Geográfico y Catastral
- [1931] *Roma* K 33 Unpublished except for one section (see n. 116 *supra*)
[Lugli] Istituto Geografico Militare
- 1932 *Firenze* K 32 Unpublished. Lugli/Minto/Taramelli/Blanchet. Istituto Geografico Militare
- 1932 *Tunisi* J 32 Unpublished. Lugli/Taramelli. Istituto Geografico Militare
- 1932 *Palermo* J 33 Unpublished. Lugli/Galli. Istituto Geografico Militare

- [Names marked on Italian mainland only]
- 1932 *Palermo* J 33 Unpublished. Lugli/Galli. Istituto Geografico Militare
[Although the date is unaltered, the additions were not made before 1934 at the earliest]
- 1934 *Aberdeen* O 30 [Crawford] Ordnance Survey
- June 1934 *Aswan* G 36 Sheet produced with and without linen backing. Unattributed. Survey of Egypt
- June 1934 *Alexandria* H 35 Sheet produced with and without linen backing. Unattributed. Survey of Egypt
- July 1934 *Wadi Haifa* F 36 Sheet produced with and without linen backing. de Villard. Survey of Egypt
- July 1934 *Cairo* H 36 Sheet produced with and without linen backing. Unattributed. Survey of Egypt
- [1934] *Lugdunum* L 31 Unattributed. Service Géographique de l'Armée
- 1955 *Praha* M 33 [Pre-World War II compilation] Horák. Československá Akademie Ved. Issued with two supplementary sheets showing trade routes and Eastern Germany, both according to Ptolemy
- 1965 *Drobeta-Romula-Sucidava* [i.e. Dacia Inferior] Tudor. Accademia della Repubblica Socialista Romania. Base is specially drawn, and covers part of L 34, 35 and K 34, 35
- 1975 *Paris: Lutetia-Atuatuca-Ulpia Noviomagus* Sketch-map base (for M 31) Chevallier. A. et J. Picard

Figure 6.1 *Tabula Imperii Romani* (after A.L.F. Rivet, 1984)

Definitive sheets

[All except the first are accompanied by an annotated gazetteer and bibliography of some kind.]

- [1938] *Lugdunum* L 31 Lantier. Service Géographique de l'Armée/Comité National de Géographie
- 1940 *Mogontiacum* M 32 Goessler. Archäologisches Institut des Deutschen Reiches, Römisch-Germanische Kommission, Frankfurt
- 1954 *Lepcis Magna* H/I 33 (GSGS series 2465) Goodchild. Society of Antiquaries/Ordnance Survey/Oxford University Press. Map available with or without text
- 1954 *Cyrene* H/I 34 (GSGS series 2465) Goodchild. Society of Antiquaries/Ordnance Survey/ Oxford University Press. Map available with or

without text

1958 *Coptos* G 36 (GSGS series 4646) Meredith. Society of Antiquaries/ Ordnance Survey/ Oxford University Press. New base map; otherwise partial revision only (changes mainly in the Eastern Desert) of 1934 edition (*Aswan*). Map available with or without text

1961 *Trieste/Tergeste* L 33 Lugli. Unione Accademica Nazionale

1966 *Milano: Mediolanum-Aventicum-Brigantium* L 32 Carettoni. Unione Accademica Nazionale

1968 *Budapest: Aquincum-Sarmizegetusa-Sirmium* L 34 Soproni. Ungarische Akademie der

Wissenschaften

1969 *Bucuresti: Romula-Durostorum-Tomis* L 35 Russu. Académie de la République Socialiste de Roumanie

1976 *Naissus-Dyrrhachion-Scupi-Serdica-Thessalonike* K 34 Sasel. Slovenska akademija znanosti in umetnosti. Issued with plan of Thessalonike

1983 *Condate-Glevum-Londinium-Lutetia* M 30–31 (GSGS series 4646) Rivet. British Academy/Oxford University Press. Issued with plans of London and Paris (one sheet)

1986 *Castra Regina-Vindobona-Carnuntum* M 33 Oliva. Československá Akademie Ved. Three sheets each with a different format

1987 *Britannia Septentrionalis* N/O 30 (GSGS series 4646) Frere/Rivet/Sitwell. British Academy/Oxford University Press. Issued with three sheets of plans at many different scales (some scales misprinted)

Note also:

[1934] Cover sheet “Aegyptus” [with series index map and French/English key] [Survey of Egypt]

1936 Demonstration sheet [lettering, titles, graticule, scale bars, symbols] Ordnance Survey

I know of no library which holds all the items listed in this series. The most complete collections that I happen to have encountered are those of the Map Room, Royal Geographical Society, London, and of the British School at Rome (to which many sheets were bequeathed by R. G. Goodchild). Neither holds the last two items listed. However, those are to be found in the Map Rooms of the British Library, London, and of the Library of Congress, Washington (note that in both libraries *TIR* holdings are split between the map and book collections).

Tabula Imperii Byzantini

[All volumes in the Österreichische Akademie der Wissenschaften: Denkschriften (philosophisch-historische Klasse) series. All maps at 1:800,000 scale. Compilers' names follow the titles.]

Band 125 (1976) 1. Hellas und Thessalia [Koder/Hild]

Band 149 (1981) 2. Kappadokien, with two sheets of important centres at 1:5,000 [Hild/Restle]

Band 150 (1981) 3. Nikopolis und Kephallenia [Soustal]

Band 172 (1984) 4. Galatien und Lykaonien [Belke/Restle]

Band 215 (1991) 5. Kilikien und Isaurien (Kilikia I, Kilikia II, und Isauria), with environs of Seleukeia at 1:200,000 [Hild/Hellenkemper]

Band 211 (1990) 7. Phrygien und Pisidien [Belke/Mersich].

***Tübinger Atlas des Vorderen Orients* (selected sheets from B IV, V and VI only)**

B IV The first millennium down to the time of Alexander the Great

3 Nubia and Sudan. From 25th dynasty to Ptolemaic-Roman times (northern part) (1:1,000,000) Zibelius, 1981

3 (separate sheet) Nubia and Sudan. From 25th dynasty to Ptolemaic-Roman times (southern part) (1:1,000,000) Zibelius, 1981

22 Iran in the Achaemenid age (1:4,000,000) Gropp, 1985

23 Eastern Mediterranean. The western part of the Persian empire from Cyrus to Xerxes (547–479/8 B.C.) (1:4,000,000) Högemann/Buschmann, 1986

B V Hellenism and the Roman periods (Hellenismus und römische Kaiserzeit)

1 Middle East. The empire of Alexander the Great (336–323 B.C.) (1:8,000,000) Seibert, 1985

3 Middle East. The Hellenistic states of the 3rd century B.C. (1:8,000,000)

- Waldmann, 1983
- 4 Middle East. The Hellenistic states of the 2nd century B.C. (1:8,000,000) Waldmann, 1985
- 5 Eastern Mediterranean and Mesopotamia. Economy, cults and education in the period of Hellenism (330–133 B.C.) (1:4,000,000) Waldmann, 1987
- 6 Asia Minor and Black Sea area. The epoch of Mithradates the Great (121–63 B.C.) (1:4,000,000) Olshausen/Wagner, 1981
- 7 Eastern Mediterranean and Mesopotamia. The reorganization of the Orient from Pompey to Augustus (67 B.C.–A.D. 14) (1:4,000,000) Wagner, 1983
- 8 Middle East. Romans and Parthians (14–138 A.D.) (1:8,000,000) Several compilers, 1988
- 11 Middle East. Romans and Sasanids during the imperial crisis (224–284 A.D.) (1:8,000,000) Kettenhofen, 1982
- 12 Eastern Mediterranean and Mesopotamia. The time of the imperial crisis (235–284 A.D.) (1:4,000,000) Kettenhofen, 1983
- 16 Syria and Palestine during Hellenistic times (each map half the sheet, 1987) 1. The Syrian wars (280–145 B.C.) (1:2,000,000) Waldmann; 2. The Maccabees and the Hasmoneans (167–37 B.C.) (1:1,000,000) Schmitt
- 17 Palestine under Roman predominance (each map half the sheet, 1988) 1. Herod the Great and the procurators (40 B.C.–70 A.D.) (1:1,000,000) Schmitt; 2. The Roman provinces Palestine and Arabia (70–305 A.D.) (1:2,000,000) Wagner/Rademacher
- 19 Palestine. Settlements according to Flavius Josephus (1:500,000) Möller/Schmitt, 1980
- 21 Egypt during the Hellenistic-Roman period (1:2,000,000) Heinen, 1989
- 22 North-east Africa and Arabian peninsula. States and peoples (4th–1st century B.C.) (1:6,000,000) Högemann, 1987

B VI Late Antiquity

- 1 Eastern Mediterranean and Mesopotamia. The reorganisation of the Orient from Diocletian and Constantine (284–337 A.D.) (1:4,000,000) Kettenhofen, 1984
- 2 Eastern Mediterranean and Mesopotamia. Christianity until the Council of Nicaea (325 A.D.) (1:4,000,000) Pirker, 1984
- 4 Eastern Mediterranean and Mesopotamia. Late Roman period (337–527 A.D.) (1:4,000,000) Kettenhofen, 1984
- [5, 6 and 7 all on one sheet by Riplinger/Benner, 1988]

- 5 Eastern Mediterranean. The early Byzantine empire (527–563 A.D.) (1:8,000,000)
- 6 Caucasus and Mesopotamia. Byzantines and Persians (581–628 A.D.) (1:8,000,000)
- 7 The Middle East during the Byzantine-Persian conflict (6th–7th century A.D.) (1:20,000,000)
- 11 Middle East: Christianity in late antiquity (4th–7th centuries) (1:4,000,000) Pirker/Timm, 1989.

N. G. L. Hammond (ed.), *Atlas of the Greek and Roman World in Antiquity* (1981)

All one-page maps unless stated (some turn-pages). Comprehensive gazetteer at the end.

- 1 Two half-page maps by Hammond (1:4,300,000): a. Excavated Neolithic sites (to 1975) [of the Aegean]; b. Early and middle Bronze age excavated sites [of the Aegean]
- 2 Physical setting of Greece and Italy (1:5,000,000) Hardaker. Inset: climatic zones (1:20,000,000)
- 3a (one-third page) Minoan Crete (1:1,500,000) Warren; 3b (two-thirds page) Orbit of Minoan Crete (1:8,000,000) Warren. Inset: Peloponnese (1:4,300,000)
- 4 Mycenaean civilization (c. 1400–c. 1100 B.C.) (1:2,000,000) Hope Simpson. Inset: Argolid (1:1,000,000)
- 5 Mycenaean world at the time of the Trojan war (1:4,300,000) Hope Simpson. Inset: Cyprus (same scale)
- 6a (half-page) The great migrations (c. 1230–1050 B.C.) (1:4,300,000) Hammond; 6b (half-page) Colonizing movements (c. 800–500 B.C.) (1:16,000,000) Graham. Insets: Sicily and S. Italy (1:8,000,000); N. Aegean and Propontis (1:4,300,000)
- 7a (half-page) Economic resources of Greek and Phoenician trade (1:16,000,000) Roebuck; 7b (half-page) Persian wars (1:4,300,000) Hammond. Inset: Cyprus (1:3,500,000)
- 8a (half-page) Battles of Marathon and Salamis (1:56,500 and 1:83,000 respectively) Hammond;
- 8b (half-page) Athenian empire (478–405 B.C.) (1: 3,500,000) McGregor. Inset: Euxine (1:16,000,000)
- 9a Two quarter-page maps by Traill (both 1:500,000): political organisation

- of Attica; topography of Attica; 9b (half-page) Peloponnesian war (431–404 B.C.) (1:4,300,000) Hammond
- 10 Two half-page maps by Travlos: a Athens (1:10,526); b Peiraeus (1:16,000)
- 11 Two half-page maps (both 1:21,000,000): a Alexander's empire, Bosworth; b the Hellenistic kingdoms (c. 240 B.C.), Walbank
- 12 Northern Greece, Thracian coast and Propontis (1:1,500,000) Hammond. Inset: Propontis (1:2,500,000)
- 13 Aegean islands and west coast of Asia Minor (1:1,500,000) Bean
- 14 Two half-page maps (both 1:1,500,000): a Attica and the Peloponnese, Hope Simpson; b Crete, Sanders
- 15 Northern Italy (1:1,500,000) McDonald
- 16 Two half-page maps (both 1:1,500,000): a Central Italy, Frederiksen; b Sicily, Talbert
- 17 Southern Italy (1:1,500,000) Ridgway
- 18a (half-page) Italy before the Roman conquest (1:5,000,000) Frederiksen; b (half-page) The Etruscan ascendancy (1:4,300,000) Rowland/Frederiksen
- 19a (half-page) Rome and her neighbours in the fifth century B.C. (1:1,000,000) Salmon; b (half-page) Rome and Ostia (1:25,000) Lowe/Davies
- 20 Two half-page maps by McDonald (both 1:8,000,000): a Western Mediterranean c. 130 B.C.; b Rome and the Greek States c. 150 B.C.
- 21 Roman empire (1:16,000,000) Birley
- 22 Roman Britain (1:2,500,000) Rivet. Insets of Hadrian's Wall and the Antonine Wall at 1:1,500,000
- 23 Gaul, Germany and the Alps (1:4,300,000) Rivet
- 24 Balkan and Danubian provinces (1:4,300,000) Wilkes
- 25a (half-page) Roman Spain (1:5,000,000) Hoyos; b two quarter-page maps of Roman North Africa by Warmington (both 1:8,000,000)
- 26a (half-page) Roman Asia Minor (1:5,000,000) French/Mitford; b (half-page) Roman Egypt (outline at 1:10,000,000, more detail at 1:5,000,000) Crawford
- 27 Eastern provinces (1:5,000,000) Harper. Inset: Palestine (1:2,000,000) Foerster
- 28 Spread of Christianity to A.D. 325 (1:16,000,000). Insets: North Africa; Asia Minor and Palestine (both 1:8,000,000) C. P. Hammond
- 29 Division of the empire c. A.D. 395 according to Notitia Dignitatum (1:16,000,000) Tomlin
- 30 Two half-page maps (both 1:20,000,000): a Principal trade routes of the Roman empire, Casson; b Barbarian invasions, Dixon.

Notes

- 1 R. S. Bagnall (ed.), *Research Tools for the Classics: The Report of the American Philological Association's Ad Hoc Committee on Basic Research Tools* (Chico, CA, 1980), 27.
- 2 *L'Année philologique* seems not to be relied upon for a full listing of maps and related literature (cf. section V.B and subsequent preliminary entries under 'monde grec' and 'monde romain et byzantin'). See also *A List of Geographical Atlases in the Library of Congress*, vols. 1 and 3–5 (Washington, 1909–58) ss.vv. 'World/ Special/Ancient,' 'Ancient History,' and similar headings.
- 3 A bibliographic survey, *Map Resources for the Greek and Roman Worlds* (ed. W. V. Harris), sponsored by the APA, is in preparation; 15 regional sections are planned. For a brief listing of older material region by region, note L. Delaporte, A. Piganiol, E. Drioton and R. Cohen, *Atlas historique I. L'antiquité* (ed. 3, Paris, 1955), 7–20.
- 4 Note A. Badziag et al., *Schulatlanten in Deutschland und benachbarten Ländern vom 18. Jahrhundert bis 1950: ein bibliographisches Verzeichnis* (München, 1982). See also C. Foss, 'Classical atlases,' *Classical World* 80 (1987): 337–65; F. B. Lloris and F. M. Simón, *Atlas de historia antigua* (Zaragoza, 1987) has appeared subsequently.
- 5 For discussion and bibliography see E. Polaschek, *PWSuppl* X (1965) cols. 680–833, esp. 820 on ancient geography in general; and J. B. Harley and D. Woodward, *The History of Cartography*, vol. 1 (Chicago, 1987) part 2.
- 6 D. Woodward (ed.), *Five Centuries of Map Printing* (Chicago, 1975), chapt. 3. Only the first 8 maps of Kiepert's *Formae Orbis Antiqui* to be issued (IX, XII, XV, XVII, XXVI–XXVII, XIX–XX) are lithographed rather than engraved, presumably in the interests of speed.
- 7 However, there is increased use of colour in what were to be some of the last sheets produced for Sieglin's *Atlas Antiquus* (maps 14–16) and Kiepert's *Formae Orbis Antiqui* (maps XXXIII–XXXV).
- 8 H. Kiepert's *Formae Orbis Antiqui* does mark many spot-heights.
- 9 This point is rightly underlined with reference to the Kiepert's maps of Asia Minor by J. and L. Robert, *La Carie: histoire et géographie historique avec le recueil des inscriptions antiques*, vol. 2 (Paris, 1954), 447–49; note further J. M. Cook, *The Troad: An Archaeological and Topographical Study* (Oxford, 1973), 34, 49, 326.
- 10 *Dictionary of National Biography (Earliest Times to 1900)* 18, pp. 561–62.
- 11 Parts I–IV (1872–74) were each issued under the title *An historical atlas of ancient geography biblical and classical*. More details are gathered from the John Murray archive in the L. R. Wilson library, University of North Carolina, Chapel Hill.
- 12 The foundation of the Palestine Exploration Fund dates to 1865. The Fund's survey of Palestine, conducted by Lts. C. R. Conder and H. H. Kitchener, resulted in 26 maps at 1: 63,360 (1880) and 7 volumes of text (1880–84). See R. North, *A History of Biblical Map Making* (Tübinger Atlas Beiheft B 32, Wiesbaden, 1979), chapt. 9, a valuable work.
- 13 Grove had written the geographical articles for Smith's *A Dictionary of the Bible* (1860–63): see further *DNB* 22 suppl., 795.
- 14 More is now known than was found by A. Diller, *The Tradition of the Minor Greek Geographers* (1952), 81 n. 24; id., *The Textual Tradition of Strabo's Geography* (Amsterdam,

- 1975), 175–76. Müller matriculated at Göttingen University on 30 April, 1832, followed three years later (29 April, 1835) by his brother Theodor (1816–81), who was to assist him during the 1840s. A thesis by Theodor, *De Thuriorum Republica*, was published in 1838. At matriculation both gave their birthplace as Hannover, and their father as “Kaufmann” in Clausthal; Carl’s names are given as “Carl Wilhelm Ludwig Müller”, though his omission of the middle two in publications (intentionally?) increases the difficulty of tracing him.
- 15 See P. Petitmengin, ‘Deux têtes de pont de la philologie allemande en France: le *Thesaurus Linguae Graecae* et la “Bibliothèque des auteurs grecs” (1830–1867),’ 76–107 in M. Bollack et al. (eds.), *Philologie und Hermeneutik im 19. Jahrhundert II* (Göttingen, 1983). A projected third volume of GGM by Müller never appeared. On his uncompleted Ptolemy, see the Appendix to H. I. MacAdam, ‘Strabo, Pliny the Elder and Ptolemy of Alexandria: Three views of ancient Arabia and its peoples,’ in T. Fahd (ed.), *L’Arabie préislamique et son environnement historique et culturel* (Colloque 1987, Travaux du Centre de Recherche sur le Proche-Orient et la Grèce Antiques, Strasbourg 10 [1989]) 289–320. Petitmengin (p. 93) overlooks the posthumously published volume of 38 maps to accompany the text of Ptolemy (1901). This was heavily drawn upon by R. Kiepert for *Formae Orbis Antiqui* maps XXXV–XXXVI (see below).
- 16 Thirty-one maps, all on single pages measuring c.18 inches wide × 15; many insets; no text.
- 17 Part I comprises maps 35, 34, 9, 12, 16–17, 20–21; Part II (1873) maps 37, 41, 26–27, 22–23, 3–4; Part III (1873) 36, 40, 24–25, 11, 2, 28; Part IV (1874) 39, 29, 32, 1, 5–8, 33; Part V (1874) 10, 13–15, 30–31, 38, 42–43, 18–19, preceded by the items mentioned in the text below. Uncoloured versions of maps 9 and 24–26 had already appeared (numbered differently) as foldout end-papers in the third (1862) and fourth (1872) editions of G. Grote, *A History of Greece*, published by Murray.
- 18 This text alone is signed C. I. Hemans.
- 19 As in the case of maps 10, 13–14, for example; map 10 was completed between 1861 and 1869 (p. 11).
- 20 See his text p. 2. “The world according to Eratosthenes” is a slight revision (with changes to the British Isles) of his *Strabonis Tabulae* I. “The world according to Strabo” is a smaller, simplified version of ibid. II. Presumably “The world according to Herodotus”, reproduced from the endpaper to Rawlinson’s vol.2, is his work.
- 21 Another, somewhat reduced version (dated 7 Nov. 1867, engraved by E. Weller) appears as the pull-out frontpaper of G. Rawlinson, *The Five Great Monarchies of the Ancient Eastern World* 3 (1871).
- 22 For Dalmont, Jacobs and Weller, see R. V. Tooley, *Tooley’s Dictionary of Mapmakers* [to 1900] (New York and Amsterdam, 1979) ss. vv. Weller in fact compiled map 10, taking the inset of the Roman wall from a work of 1867 (p. 11).
- 23 H. Kiepert reviewed parts 1–3 (only) in *Zeitschrift der Gesellschaft für Erdkunde zu Berlin* 9 (1874): 390–400. He takes Müller to task for not being up-to-date, and for lack of background in ancient topography; but he also criticizes the lack of prominence given to Müller’s name.
- 24 It is not clear whether further sheets were produced for the edition issued by Little, Brown & Co., Boston: see *NUC* (pre-1956) vol. 552, p. 320. Map 21 was reprinted for the 1907 edition of Grote’s *History* (vol. 2 uncoloured endpaper).
- 25 *Fifty-Five Years at Oxford: An Unconventional Autobiography* (London, 1945), 146–50. For

Grundy's university appointment, see p. 86.

26 Ibid. 146 and 148; cf. chapt. 3.

27 For the latter allegation see *ibid.* 147–48.

28 See H. M. Wallis and A. H. Robinson (eds.), *Cartographical Innovations: An International Handbook of Mapping Terms to 1900* (Tring, 1982), 229–31.

29 Grundy (*supra* n. 25), 150 remarks that “as an atlas it would have been very expensive”, and takes credit for suggesting that separate booklets be issued. Perhaps tinting was not an economical addition after all.

30 W. M. Calder and G. E. Bean, *A Classical Map of Asia Minor* (Supplement to *AnatSt* 7 [1957]); also issued separately in 1958: 7 pp. of text, 6 pp. index (all unnumbered), map reproducing Anderson's outline without colour or relief, and without the inset; map scale wrongly given. Note p. [1] for comment on the high quality of Anderson's work, and for the point that the revision was only partial and provisional.

31 The title has caused confusion: the little plate inset on the blue hardcover has always read *Murray's Classical Atlas*, but the title page read *Murray's Small Classical Atlas* until a new wrapper without *Small* was produced in 1957. The title page of a 1959 reprint reads *Murray's Classical Atlas for Schools*.

32 For such a work, see *Everyman's Atlas of Ancient and Classical Geography* (1907 and 1952 editions); its introduction (which stresses of Greece “how vitally its physical features affected its history and its place among the nations”, p. vi) is followed by maps where even significant topographical features fail to stand out. Cf. D. Wood's criticisms in ‘Pleasure in the idea/the atlas as narrative form,’ *Cartographica* 24 (1987): 33.

33 With some adaptation, and with the boundaries of Alexander's empire added (since no space was given for a separate map of that).

34 Issued after the atlas, but in preparation at the same time.

35 With minor changes, notably the addition of a fourth altitude tint in XII.

36 *Supra* n. 16.

37 Remarked upon by K. J. Neumann, *Entwicklung und Aufgaben der alten Geschichte* (Strasbourg, 1910), 70–71; note that he expected Kiessling's resumption of the *Atlas Antiquus* to be sustained.

38 In maps 10, 26–27 and 29, for example.

39 The contents listed below cannot do justice to the richness of the work: see particularly map 16.

40 *Petermanns geographische Mitteilungen* 81 (1935): 368. The fullest notice is by H. Treidler, *BursianJB* 254 (1936): 123–31.

41 Text does accompany the third edition (1880) of the Spruner-Menke *Hand-Atlas für die Geschichte des Mittelalters und der neueren Zeit*.

42 For the likelihood of rivalry from Kiepert, see n. 52 *infra*.

43 Philipp (*supra* n. 40). The case where Sieglin articulated conclusions orally which C. T. Fischer then published is suggestive: see A. Diller, *The Textual Tradition of Strabo's Geography* (*supra* n. 14), 91.

44 In library catalogues search under ‘Sieglin’ and ‘Spruner’. A complete copy in excellent

condition is held by the DAI, Rome.

- 45 The fullest accounts are still the obituary notices by his friend J. F. M. Partsch, *Geographische Zeitschrift* 7 (1901): 1–21, 77–94, and by V. Hantzsch, *Allgemeine Deutsche Biographie* 51 (1906): 133–45. For a recent summary see I. Kretschmer et al. (eds.), *Lexikon zur Geschichte der Kartographie von den Anfängen bis zum Ersten Weltkrieg* (Vienna, 1986) s.v. Kiepert. Note that the monograph about the Kiepersts, cited at the end of the entry as published in Berlin in 1985, has in fact never been issued. It is expected to appear in the *Kartographische Miniaturen* series, but Prof. U. Freitag kindly informs me that little fresh will be added about the Kiepersts' map-making beyond a bibliography of their works.
- 46 See M. Linke, 'Carl Ritter (1779–1859),' 99–108 in T. W. Freeman (ed.), *Geographers: Biobibliographical Studies*, vol. 5 (London and New York, 1981).
- 47 See especially *Lehrbuch der alten Geographie* (Berlin, 1878) (Eng. trans., *A Manual of Ancient Geography*, London, 1881).
- 48 Some impression of his vast output can be gained from *Gesamtverzeichnis des deutschsprachigen Schrifttums 1700–1910*, vol. 75, 36–44 and 1911–1965, vol. 68, pp. 69–70 (though contributions to others' works are excluded).
- 49 Even more awkward in the black-and-white microfiche edition available from Scholars Press, Atlanta, Georgia.
- 50 See n. 45 and obituary notices by J. F. M. Partsch, *Zeitschrift der Gesellschaft für Erdkunde zu Berlin* (1915): 512–29, and in *Geographische Zeitschrift* 22 (1916): 121–26.
- 51 The only subsequent *CIL* maps of comparable size are the outline ones that accompany XIII.5 (1943) and XVII.2 pp. LIV–LVI (1986).
- 52 If the initial prices held, Kiepert's atlas was due to cost 18 Marks, Sieglin's 20. Kiepert's price in sterling was 30/-, as opposed to a minimum of 105/- for Smith's atlas (in loose parts).
- 53 A few modern names of rivers and islands (with no ancient names attested) are given in maps XXVI and XXVII.
- 54 Note the chapter "Antike Geographie" by A. Ruge in W. Kroll (ed.), *Die Altertumswissenschaft im letzten Vierteljahrhundert. Eine Übersicht über ihre Entwicklung in der Zeit von 1875–1900 im Verein mit mehreren Fachgenossen* (Leipzig, 1905); J. Jung, *Grundriss der Geographie von Italien und dem Orbis Romanus* (Müller's *Handbuch* III.III.1, ed. 2, München, 1897); and periodic surveys in *GeogJb* and *BursianJb*.
- 55 Among his other preoccupations must have been *Formae Urbis Romae Antiquae* compiled with C. Hülsen (1896). For reduced black-and-white reproductions of the 1912 revision, see A. P. Frutaz, *Le Pianta di Roma* (Roma, 1962), nos. LIV–LVI (97–100) and tav. 114–16.
- 56 3/- per map by 1925 (Hellenic and Roman Societies' Advisory Leaflet 2, *The Geography of the Ancient World...* 10); all except XXI and XXII were still in print in 1925.
- 57 R. Kiepert completed their joint work there by issuing the 24-sheet series *Karte von Kleinasien* at 1:400,000 (1902–1906); many revisions appeared up to 1916.
- 58 A reprint by Edizioni Quasar, Roma, is announced.
- 59 For his career see H. Herter, *Gnomon* 48 (1976): 317–20 (who omits this episode).
- 60 See *Jahrbuch der Preussischen Akademie der Wissenschaften* 1939, p. 66; 1940, p. 61; 1941, pp. 55 (quoted) and 95; 1942, p. 28; *UAI Comptes Rendu* 1939, p. 36. H. Lietzmann, sponsor of

- the project within the Academy, died in 1942. As Burr indicates (p. V), his work on Map XI was relevant to the topic of his monograph ΝΕΩΝ ΚΑΤΑΛΟΓΟΣ: *Untersuchungen zum homerischen Schiffskatalog* (Klio Beiheft 49, 1944).
- 61 *Lexikon zur Geschichte der Kartographie* s.v. Reimer.
 - 62 See D. Woodward (ed.) (supra n. 6), chapt. 5–6; C. R. Perkins and R. B. Parry (eds.), *Information Sources in Cartography* (London, 1990), chapt. 12. For change at the Ordnance Survey, see W. A. Seymour (ed.), *A History of the Ordnance Survey* (Folkestone, 1980), 242–43.
 - 63 A. Kolb, ‘Ferdinand Freiherr von Richthofen (1833–1905),’ 109–15 in T. W. Freeman (ed.), vol. 7 (supra n. 46). For general developments in Germany after Ritter, see R. E. Dickinson, *The Makers of Modern Geography* (New York, 1969), chapt. 4.
 - 64 H. Wagner, ‘Die Pflege der Geographie an der Berliner Universität im ersten Jahrhundert ihres Bestehens, 1810–1910,’ *Petermanns geographische Mitteilungen* 56 II. (1910) Heft 4: 172–75. Of the 26 contributors to H. Kiepert’s *Festschrift* in 1898, only 3 were geographers.
 - 65 A grandiose atlas scheme was urged by O. Spengler in a lecture given at the Orientalistentag, München, 1924, published posthumously in *Die Welt als Geschichte* 2 (1936): 303–10 (reprinted in Spengler’s *Reden und Aufsätze* [ed. 3, München, 1951], 96–104).
 - 66 *UAI Compte Rendu* 1920, 315. This report is published both separately and (with some omissions and different pagination) in *Académie Royale de Belgique: Bulletin de la Classe des Lettres et des Sciences Morales et Politiques*. Except for 1939, I cite from the latter.
 - 67 Membership: Homolle (France), Kenyon (Britain), Lanciani (Italy), Pârvan (Roumania), Sfériadès (Greece), Shotwell (U.S.A.) (*UAI* 1921, 247).
 - 68 *Ibid.* 262–64.
 - 69 “Principal phases” of “historical geography” were somehow also to be marked on with appropriate use of colours and symbols.
 - 70 Cf. *UAI* 1921, 260.
 - 71 *UAI* 1922, 309–13.
 - 72 This estimate is based on the 56 sheets later planned for *Tabula Imperii Romani* at 1:1,000,000.
 - 73 The new title was to signal broader scope than the old, which “semblerait avoir un sens surtout historique et écarter la possibilité de comprendre les antiquités préhistoriques, préromaines et du moyen âge” (*UAI* 1927, 376).
 - 74 On the progress of *FOR*, see Appendix 1.
 - 75 *UAI* 1960, 447.
 - 76 Hence the reflection in 1990 that *FOR* “devient pratiquement la ‘Forma Italiae’”. The equation is already made in the *UAI Manuel/Handbook* (Bruxelles, 1987), 21.
 - 77 See Crawford’s *Said and Done: The Autobiography of an Archaeologist* (London, 1955), and G. Clark, ‘O. G. S. Crawford, 1886–1957,’ *ProcBritAc* 44 (1958): esp. 295–96.
 - 78 Cf. his ‘Editorial notes,’ *Antiquity* 7 [25] (1933): 2.
 - 79 Cf. W. A. Seymour (ed.) (supra n. 62), chapt. 24; and R. Hellyer, ‘The archaeological and historical maps of the Ordnance Survey,’ *Cartographic Journal* 26 (1989): 111–33, an important article.

- 80 J. L. Myres, in W. F. Grimes (ed.), *Aspects of Archaeology in Britain and Beyond: Essays Presented to O. G. S. Crawford* (London, 1951), 5; Crawford, *Said and Done* (supra n. 77), 164.
- 81 Cf. Seymour (supra n. 62), 239; Hellyer (supra n. 79), 112.
- 82 Crawford (supra n. 77), 201–202.
- 83 See ‘A proposed map of the Roman empire,’ in *International Geographical Congress, Cambridge, July 1928: Report of the Proceedings* (Cambridge, 1930), 403.
- 84 I.e. a one-volume monthly digest of the timetables of all railway companies in the British Isles, with sketch maps.
- 85 On *IMW* see R. B. Parry and C. R. Perkins, *World Mapping Today* (London, 1987), 61, 68; and C. B. M. Lock, *Modern Maps and Atlases: An Outline Guide to Twentieth Century Production* (Hamden, 1969), 63–66; *Lexikon zur Geschichte der Kartographie* 1/1, 521–29.
- 86 *IGU Congress 1928: Report* p. 48.
- 87 The commission comprised C. de la Roncière, F. Pellati, H. Castro, with G. Lugli, T. Ashby and Gen. Vacchelli as co-opted members. The latter two died in 1931 and 1932, respectively.
- 88 *International Geographical Union commission no. 7, Map of the Roman empire, 1:1,000,000: first report 1929*. For the translations see Hellyer (supra n. 79), 132; the DAI in Rome holds a copy of the Italian one.
- 89 Crawford (supra n. 77), 202; cf. id., ‘Mapping the Roman empire,’ *Geographical Journal* 120 (1954): 364.
- 90 *The International 1:1,000,000 Map Report for 1938* (Southampton), 6. In fact many maps in the series have been overprinted in two colours rather than one (see Hellyer [supra n. 79], 129–30); three colours are found in the four maps of Egypt (1934) and L 31 (1938).
- 91 See summary of the meeting in *GeogJ* 74 (1929): 414. Crawford’s recollection that four Italian sheets were on display in draft then (supra n. 77, 202) must be mistaken; his memory on many details was faulty twenty years later.
- 92 See ‘Recent events,’ *Antiquity* 3 (1929): 230.
- 93 *UAI* 1929, 295–96.
- 94 F. Pellati and G. Lugli, ‘Circa la carta dell’impero romano,’ 618–21 in *Comptes rendus du Congrès International de Géographie, Paris 1931*, vol. 3 (Paris, 1934); J. Tourneur-Aumont, *ibid.* 627–28, made the point that “la frontière de l’Empire Romain ne peut en aucun cas être figurée comme une ligne-limite à la moderne”.
- 95 See the resumé in *Tabula imperii Romani: map of the Roman empire based on the Carte internationale du monde au millionème, London Congress 1935* (Southampton, 1935), 5–6 (issued prior to the Congress).
- 96 On its activities, see W. Krämer, ‘Fünf und siebenzig Jahre Römisch-Germanische Kommission,’ Beiheft to *Bericht der Römisch-Germanischen Kommission* 58 (1977): 5–18. Bersu was stripped of the directorship in 1935 for “political reasons”; on his career see Krämer, *Bericht* (*ibid.*) 45 (1964): 1–2, and J. Filip (ed.), *Enzyklopädisches Handbuch zur Ur- und Frühgeschichte Europas*, vol. 1 (Prague-Stuttgart, 1966), 116.
- 97 Crawford (supra n. 77), 203.
- 98 *International Map of the World 1:1,000,000: report of a conference held in November 1932 at*

- Rome in connection with the international 1/M map of the Roman empire* (Southampton, 1933). (It may be seen in the library of the British School at Rome; a photocopy exists in the map room of the Royal Geographical Society, London). See also on the conference 'Editorial notes,' *Antiquity* 7 [25] (1933): 2–3.
- 99 The first four pages of an index for K 33 *Roma* were compiled and printed for presentation to the 1935 Congress. A copy exists in the map room of the Royal Geographical Society, London.
- 100 E. de Martonne, 'Présentation de la carte de l'empire romain (feuille de Lyon),' 73 in *Comptes rendus du Congrès International de Géographie, Varsovie 1934*, vol. 4 (Warsaw, 1938). (Strangely, this is the only item recorded in the proceedings. For the others mentioned, see *TIR London Congress* [supra n. 95], 8–9).
- 101 *TIR London Congress* *ibid.*, 4.
- 102 See the full record in *International Map of the Roman Empire, London Congress 1935* (Southampton, 1936).
- 103 *Ibid.* 15; *UAI Manuel/Handbook* 20.
- 104 It did this through a demonstration sheet for borders, lettering, titles, graticule, scale bars, and key to symbols, published by the Ordnance Survey in 1936. Territorial boundary lines and names of peoples appear in red; otherwise only black is used.
- 105 Note the unsigned report and perceptive critique of the Congress, 'Tabula imperii Romani,' *GeogJ* 86 (1935): 523–26. The author is rightly pessimistic about the prospects for drawing-offices and presses in different countries producing uniform work (especially regarding the prescribed colour chart for altitude tinting).
- 106 Crawford (supra n. 77), 204–205 and photo plate 11.
- 107 *The International 1:1,000,000 Map, Report for 1937* (Southampton, 1938), 5–6 with index diagram.
- 108 *Ibid.* for 1938, 5 with index diagram.
- 109 *Bericht über den VI. Internationalen Kongress für Archäologie, Berlin 21.–26. August 1939* (Berlin, 1940), 52.
- 110 Crawford (supra n. 77), 205–206.
- 111 Crawford (supra n. 89), 363, with F. W. Adams, 'Tabula imperii Romani: A map of the Roman empire based on the Carte Internationale du Monde au Millionème,' *AJA* 58 (1954): 48 (this valuable article incorporates information from R. G. Goodchild).
- 112 But like L 31 and M 33 (1955) it retains contour lines.
- 113 See below n. 127.
- 114 'La carte internationale de l'empire romain (Tabula imperii Romani),' *Bulletin de l'Association Guillaume Budé* 62 (1939): 36.
- 115 Hellyer (supra n. 79), 117–19; Crawford (supra n. 77), 250–51 (for Greece); G. Lugli, 'Prefazione' to L 33 (1961), 7. For the relevant part of I 36, there was material available in M. Avi-Yonah, 'Map of Roman Palestine (lacking relief),' *QDAP* 5 (1936): 139–93.
- 116 Lugli (supra n. 115), 6–7. These sheets were never published but some copies did circulate. A section of K 33 *Roma* (4.75" × 7.5) (Ferentum and Amiternum south to Pontiae Ins.) appears in O. Barbier, 'La carta dell'impero romano alla scala di 1:1 000 000,' *L'Universo* 12

- (1931): 675–79, together with the key (all in colour) and series index diagram.
- 117 Crawford's books were loaded and ready to leave on 30 November but the drivers of the vans were ordered to a "dental parade", so the vans did not move before the raid that night (Seymour [supra n. 62], 240).
- 118 "The project in its *original* form must now be regarded as completely and irrevocably dead" (Crawford [supra n. 89], 363).
- 119 Note *ibid.* 364, and Crawford (supra n. 77), 206. On Crawford and *Antiquity*, see Clark (supra n. 77), 289–91.
- 120 "My own private racket" (Crawford [supra n. 77], 246); and cf. *ibid.*, chapt. 18.
- 121 Seymour (supra n. 62), 235, and chaps. 25–26. Crawford's original hope that "there is no reason why the proposed map should not also ultimately be a profitable undertaking" was never fulfilled (*IGU Congress 1928: Report* [supra n. 83], 406).
- 122 *Antiquity* 7 [25] (1933): 1; cf. Crawford (supra n. 77), 217–18, 220.
- 123 *The International 1:1,000,000 Map, Report for 1949–51* (Chessington), 9 with index diagram.
- 124 International Geographical Union: VIIth General Assembly, XVIIth international geographical congress, Washington, August 8–15, 1952. *Report of the Commission on the International Map of the World 1:1,000,000*, p. 31. For background, see R. G. Goodchild, 'Roman Tripolitania: Reconnaissance in the desert frontier zone' (with appendix on the cartography of the region), and 'Mapping Roman Libya,' *GeogJ* 115 (1950): 161–78 and 118 (1952): 142–52, reprinted with some supplementary notes in J. Reynolds (ed.), *Select Papers of the Late R. G. Goodchild* (London, 1976), 3–16, 145–54.
- 125 See the review by L. P. Kirwan, *GeogJ* 124 (1958): 454–55.
- 126 'Prefazione' (supra n. 115), 7.
- 127 B. Horák, 'A geographical and ethnographical picture of the Bohemian lands at the time of the Imperium Romanum: Explanation of the map of the Imperium Romanum at the scale of 1:1 million, Sheet M 33 of the International Map,' *Rozprawy Československé Akademie Ved* 65.3 (1955): 34–39; see further P. Oliva, 'Das Projekt der *Tabula Imperii Romani*,' *Eirene* 14 (1976): 106.
- 128 *UAI* 1947, 376.
- 129 *UAI* 1957, 263–69.
- 130 Supra n. 124, especially Annex VII "Paper by Lt. Col. L. P. Kirwan... on the International Map of the Roman Empire", pp. 29–32.
- 131 Evidently nothing came of the call by H. J. Eggers, 'Der "Atlas der Urgeschichte" und die "Tabula Imperii Romani",' for these two projects to be combined (*Limes Romanus Konferenz Nitra [1957]*, supplement to *Slowakische Akademie der Wissenschaften, Sektion der Sozialwissenschaften* [Bratislava, 1959], 117–29).
- 132 This was restructured in 1969 (*UAI* 417–21).
- 133 Note for example *UAI* 1975, 398; 1976, 424; 1979, 461.
- 134 *UAI Manuel/Handbook*, 21; abandonment is *not* suggested, however, for J 32 (*UAI* 1985, 344).
- 135 UNESCO, through CIPSH, has made subventions, but each has been the subject of an individual application. The award for L 32 was lost because the deadline for going to press

was not met.

- 136 D. L. Kennedy and D. Riley, *Rome's Desert Frontier from the Air* (London, 1990) illustrates well the opportunities open between the two World Wars (since lost).
- 137 Algeria, Jordan, Syria, for example (UAI 1986, 351–52).
- 138 Consolidation of Turkish territory onto 3 maps was considered (UAI 1978, 415).
- 139 Crawford (supra n. 89), 363; cf. Crawford (supra n. 77), 202–203, 248.
- 140 *IGU Congress 1928: Report* (supra n. 83), 406; cf. Crawford (supra n. 77), 202.
- 141 UAI 1976, 423; cf. 1981, 427, and (in general) 1974, 331.
- 142 Note H 36 *Cairo*, J 32 *Tunisi*, K 30 *Madrid*, K 33 *Roma*.
- 143 See preface p. 7; cf. a similar problem with K 34 *Naissus* (preface p. 9).
- 144 I owe this point to J. J. Wilkes, who possesses a copy with the original title.
- 145 *The International 1:1,000,000 Map, Report for 1934* (Southampton), 6; Crawford (supra n. 77), 250–51; Hellyer (supra n. 79), 119. For a similar pattern of events, when Greece declined to act in 1964, but then asked to take on the compilation for all its territory six years later, see D. A. Zakythinos, 'Le Tabula Imperii Romani et les recherches d'histoire de l'Hellénisme sous la domination romaine,' *PraktAkAth* 47 (1972): 313.
- 146 UAI 1959, 432; 1972, 437; 1976, 423; *ProcBritAc* 71 (1985): 66; cyclostyled report 1986.
- 147 Note S. Soproni, 'Methodische Bemerkungen zum Blatt TIR L 34 Budapest,' *Eirene* 14 (1976): 111–13.
- 148 'Réunion de la Commission de la T.I.R.,' 239 in R. Chevallier (ed.), *Colloque international sur la cartographie archéologique et historique 1970* (Paris, 1972).
- 149 See J. Burian, 'Die Vorbereitung des Sektors TIR M 33 (Praha),' *Eirene* 14 (1976): 108–11.
- 150 See for example *1932 Conference Report* (supra n. 98), 4, 7; Hellyer (supra n. 79), 112 and 119 n. 58.
- 151 The equivalent of one map at 1:1,000,000 is four maps at 1:500,000.
- 152 For example F 36 *Wadi Haifa*, H 35 *Alexandria*, O 30 *Aberdeen*.
- 153 UAI 1983, 472.
- 154 From modified polyconic to Lambert conical conformal: see Lock (supra n. 85), 66.
- 155 There is brief notice of the change by G. Caretoni, 'Le comité central de la TIR et l'état actuel des travaux sur la Tabula Imperii Romani (Février 1974),' *Eirene* 14 (1976): 104.
- 156 Formerly 'World Aeronautical Chart': see further *World Mapping Today*, 62 and 70; Lock 67; *Lexikon zur Geschichte der Kartographie* 1/1, 521–29 (all v. supra n. 85).
- 157 R. A. Gardiner, 'The international map of the Roman empire,' *GeogJ* 139 (1973): 111.
- 158 Cf. A. L. F. Rivet in UAI 1984, 351.
- 159 The tendency to accept the growing range of inconsistencies is already apparent in G. Lugli, 'La Tabula Imperii Romani alla scala di 1 milione,' 47–49 in *Atti del I Congresso Internazionale di Archeologia dell'Italia Settentrionale* [1961] (Torino, 1963) with pls. I–IV (reduced black-and-white reproductions of M 32, L 33 and both editions of G 36).
- 160 Crawford (supra n. 77), 206.

- 161 The *Forma Imperii Byzantini* planned as part of the Brussels Corpus *Historiae Byzantinae* may possibly be considered the precursor of *TIB*. But only one volume appeared: E. Honigsmann, *Le Synekdomos d'Hiéroklos et l'opuscule géographique de Georges de Chypre* (1939), and its four large endpaper maps are simply black-and-white sketches at 1:4,000,000 and 1:2,000,000. In 'Pour l'atlas byzantin,' *Byzantion* 11 (1936): 559–62, Honigsmann had already criticized the general lack of serious concern for every aspect of the geography of the ancient world, and outlined a sweeping programme to overcome it.
- 162 Both are published as Denkschriften (philosophisch-historische Klasse) of the Academy. Four monographs have so far appeared: Denkschriften Bände 112 (1973), 131 (1977), 138 (1979), and 186 (1986). Hunger's *Vorwort* to the last summarizes the progress of *TIB* to 1986.
- 163 See further H. Hunger in Band 125 (1976) 7 and 9.
- 164 Note the substantial overlap between *TIB* 2 and 5, and between 4 and 5; one area is in fact covered by 2, 4, and 5, another by 4, 5, and 7.
- 165 See F. Kelnhofer, *Die topographische Bezugsgrundlage der Tabula Imperii Byzantini* (Beiheft zum 125. Band, 1976), 5, 40–41, and Abbildung 1.
- 166 For example, the 1404 series (U.K. and other nations, including Greece and Turkey), or the Tactical Pilotage Chart (U.S.A.), both at 1: 500,000.
- 167 Among reviews of *TIB*, see those in *Speculum* 53 (1978): 391–93; 58 (1983): 821–22; 59 (1984): 660–62, and 62 (1987): 384–85, the first by T. E. Gregory, others by C. Foss.
- 168 For a general overview see *Recent German research on the Middle East—a project of the Deutsche Forschungsgemeinschaft: The Tübingen Atlas of the Middle East* (ed. 2, Bonn and Tübingen 1983).
- 169 So far, about 30 relating to Part A, and 100 relating to Part B.
- 170 Note *Kartenverzeichnis* (2 vols. Arbeitsheft 14, 1984) and *Tabellen zur Umschreibung topographischer Namen und Begriffe* (ed. 2, Arbeitsheft 15, 1984).
- 171 Note for example A II 2, "Mineral raw materials in prehistoric and historic times".
- 172 See further *Farbatlas* (Arbeitsheft 13, 1982).
- 173 Thus, blue for Roman territory, brown for Parthian.
- 174 Note the attempt in B V 6; the tinting in B V 21 (1:2,000,000) is more successful.
- 175 See now W. Denk, *Atlaskartographie: theoretische und praktische Probleme dargestellt am Beispiel des "Tübinger Atlas des Vorderen Orients (TAVO)"* (Beiheft B 57, Wiesbaden, 1990). Note further TAVO preface (W. Röllig, G. Schweizer, W. Denk, 1977); W. Denk and W. Röllig, 'Der Tübinger Atlas des Vorderen Orients,' *International Yearbook of Cartography* 20 (1980): 54–77.
- 176 Note B V 3 and 4.
- 177 E.g. the Delta region of Egypt in B V 5.
- 178 Print-runs have been reduced from 1200 to 1000, and none is yet exhausted; the total number of subscribers is around 400.
- 179 The gazetteer is followed (pp. 55–56) by lists of the founders of Greek colonies and their dates, and of modern equivalents for ancient names in maps 22 and 23 (only).
- 180 Some modern place-names are marked elsewhere (e.g. maps 18, 22–24, 26).

- 181 The key to map 19a is particularly unclear.
- 182 For the history of the Carta Archeologica d'Italia (1881–97), see L. Cozza, *Forma Italiae* serie II.1 (Firenze, 1972), 429–59.
- 183 For listing of volumes to 1988 (without scales specified), see the frontpaper of U. Moscatelli, *Trea*.
- 184 ‘Quelques remarques à propos de la carte archéologique de la Gaule romaine (*Forma orbis romani*)’, *CRAI* (1943): 575–76.

*Sékolène Débarre's Cartographier
l'Asie Mineure: L'orientalisme
allemand à l'épreuve du terrain (1835–
1895) (Paris: Peeters, 2016). Review in
Bryn Mawr Classical Review 2017.05.27*

Do not be deterred by the nineteenth-century focus: this remarkable revised dissertation offers plenty to engage scholars who study ancient Asia Minor. Débarre's overall aim is to modify the claim advanced by Edward Said that German Orientalism conveyed a less real and tangible "Orient" than did its British or French counterparts. To demonstrate otherwise in one important sphere, she presents an original and absorbing investigation of German efforts to map Asia Minor. In the book's six chapters these emerge as a succession of increasingly intense initiatives over a sixty-year period. This runs from 1835, when Helmuth von Moltke embarked upon the novel enterprise of a Prussian military mission to Constantinople (the subject of [chapter 1](#)), to 1895, when Colmar von der Goltz's decade-long leadership of a second such mission ended and the map division of the Ottoman General Staff was initiating the first extensive trigonometrical surveys in Asia Minor (p. 313). The period encompasses the publication of two of Carl Ritter's projected three massive volumes on Asia Minor—in 1858–1859, just before his death—which formed the sixth and final part of his monumental *Die Erdkunde* (p. 145). In Ritter's view (p. 99), Asia Minor was a "transitional" region (*Uebergangswelt*) between the Asiatic and European worlds, and his perspective (the subject of [chapter 4](#)) boosted the conviction that there was a mission for Germany to accomplish in the decadent Orient.

The figure, however, who features as a unifying presence from [chapter 2](#) onwards is Heinrich Kiepert (1818–1899). Ritter's precocious pupil, he matured into an icon of German cartographic expertise at its finest, as a scene in Pierre Benoit's 1918 novel *Koenigsmark* nicely reflects (p. 1).¹ Kiepert's first exposure

to Asia Minor in 1841–1842—joining as a student, at his own expense (p. 74), the expedition headed by the antiquary August Schönborn and the naturalist Friedrich Löw—receives close attention in [chapter 2](#). Débarre can re-evaluate this entire disappointing venture in unprecedented depth thanks to her discovery of 42 letters relating to it (p. 70). Kiepert’s journeys back to Asia Minor much later are treated in [chapter 6](#), together with his other involvements in its mapping towards the end of the century, culminating in the *Spezialkarte vom Westlichen Kleinasien* which appeared in 1890–1891 (15 sheets at 1:250,000).

The business of nineteenth-century mapmaking with special reference to Kiepert and Asia Minor fills the remaining two chapters. [Chapter 3](#) tackles the aims and intellectual context of this cartography as “le travail de cabinet” (p. 107), the fundamental difficulties of acquiring physical, cultural and demographic data and assessing its accuracy, the problem of representing elevation changes in a landscape, and the enterprising strategies pursued by Kiepert’s successive publishers—Simon Schropp in the 1840s, thereafter Dietrich Reimer—to disseminate his mapping of Asia Minor. [Chapter 5](#) takes a step backward to consider travelers’ collection of data on the ground—the multiple challenges posed by rudimentary means of transport through punishing terrain, as well as by climate, ill-health, unpalatable diet, uncooperative local authorities and peasantry, and the inability to communicate with either except through an interpreter (*drogman*) and escort (*kavas*). In these latter circumstances it was no wonder that geographical names were misunderstood or the existence of several variant names for the same feature overlooked. The potential for confusion was only compounded by differing conventions among European languages for the transcription of Turkish names. To be sure, by the late nineteenth century there was greater success in surmounting this host of obstacles. More active diplomatic and consular assistance was now available, and increasing numbers of Germans were recruited into Ottoman service, both civil and military. In addition, data from surveys now undertaken for railroad construction was invaluable to mapmakers.

To hope for more from this already wide-ranging study—lucidly presented, amply illustrated, and ably researched (the exploitation of Kiepert’s *Nachlass* is outstanding)—could indeed appear unreasonable. Even so, colleagues whose interest lies in the Asia Minor of antiquity rather than the nineteenth century might fairly wish that Débarre had raised further the profile of the numerous German antiquaries, archaeologists, and epigraphers whose cumulative contribution to comprehending the landscape in all its aspects surely deserves fuller recognition. This is not to deny her acknowledgement of Kiepert’s unwavering devotion to classical antiquity, although it does seem wide of the mark to reckon that his 1878 *Lehrbuch der alten Geographie* “marquait

l'apogée de son oeuvre de géographie historique, imprégnée de philologie classique" (p. 305 n. 940).² It is more unfortunate that, despite her awareness (p. 84 n. 274) of the Roberts' *La Carie II* (1954), she neglects to tap its scholarship on travelers in search of antiquities, and evidently overlooks Louis Robert's *A Travers l'Asie Mineure* (1980), [chapter 2](#).

Most unsatisfying, however, is the absence of methodical evaluation of the cartography for which Kiepert became so revered. His meticulous instructions for gathering data in the field are reviewed at length (pp. 249–59), and his maps were no doubt among those which so provoked the Turkish geographer İsmail Hakkı in 1914:

De fait, ils occupant notre pays avec la carte. Les Allemands, les Français et les Grecs se meuvent à Istanbul et Izmir comme dans leurs pays d'origine, voire comme dans leurs propres maisons. Ils peuvent faire ce qu'ils veulent car ils ont des armes en main: le savoir géographique et la carte.³

Even so, we should ask, did Kiepert's maps truly merit such fearful renown? Reasons to suspect not can readily be found. Meantime, as Débarre does explain in [chapter 6](#), by the late nineteenth century there is sound cause to rate Ottoman cartography more highly than Kiepert and other racially prejudiced westerners were prepared to concede (pp. 276–81, 309). In relation to the vastness of Asia Minor, Kiepert's own fieldwork there was only ever minimal, and his instructions just mentioned frequently seem utopian. In a set of fifteen letters sent to him by von der Goltz between 1887 and 1897—another discovery splendidly exploited by Débarre (p. 286)—it is touching to hear of the general's struggles to adhere most assiduously to Kiepert's prescriptions on a return trip between Constantinople and Angora in summer 1889 (fifteen days in the saddle, covering 920 km, plus three rest days, p. 295). But alas, he pleads, "Wenn man wie ein Tartar reist, kann man nicht viel und genau zeichnen"; en route his jolted instruments ceased to furnish reliable readings (p. 296).

Back in 1841 it had been young Kiepert's unavoidably slow gathering of data that led Schönborn and Löw to press on to Lycia without him (p. 81). Years later he would deplore the tendency of travelers to limit the data they provided to the line of the route followed, without elaboration upon the wider landscape (p. 112). In this connection Débarre might have noted that when Kiepert himself risked such elaboration in the Troad in January 1842, the result was to sow confusion for decades. As John Cook explains:

the misfortune of the survey was that H. Kiepert mapped the very difficult interior in January when the weather seems to have been bad and he must have had to rely on guesswork for the areas that he could not see; and he and

his successors never realized how conjectural this survey was.⁴

A uniquely incisive review of mapping that originates with Heinrich Kiepert, although produced after his death by his son Richard, proves instructive. These maps form a set of 24 sheets at 1:400,000, *Karte von Kleinasien*, published by Reimer between 1901 and 1907, then repeatedly revised (1908–1916), and later reissued in 1929 (mentioned by Débarre p. 312, but outside her timeframe). The reviewer in *La Géographie* 19 (1909): 367–76, Guillaume de Jerphanion, resident since 1903 at Tokat in Pontus, was himself both a traveler, able to comment on ten of the sheets from firsthand knowledge, and a mapmaker.⁵ His dissection of multiple slips in the itineraries of travelers who had no means to measure distances or elevations on their route accurately, let alone to encompass the wider landscape, confirms in sobering detail how flawed much of the Kiepersts' mapping inevitably is, despite its authoritative appearance. At the same time we should recall—as İsmail Hakkı perhaps never knew—that the decisive impetus for Richard Kiepert even to attempt the first mapping of Asia Minor in its entirety at the ambitious scale of 1:400,000 stemmed from his surprise acquisition of an unpublished Ottoman Ministry of Commerce map series at 1:300,000.⁶

Finally, although Débarre recognizes that the Kiepersts' maps were considered indispensable far into the twentieth century pending the delayed completion of better ones (pp. 312–13), the point merits reinforcement with reference to this material's intensive exploitation by both the Ottoman and British General Staffs. Débarre mentions (p. 301) only that, as soon as Heinrich's *Spezialkarte* appeared, von der Goltz and the Ottoman staff at once collaborated on producing a Turkish (Arabic script) enlargement at 1:210,000 (to match Russian maps at this scale, p. 297). But later, between about 1908 and 1916, the Ottomans made a rapidly revised version of the *Karte von Kleinasien* sheets covering central and eastern Asia Minor (maintaining Richard's 1:400,000 scale), as well as enlargements at 1:200,000 of all its sheets and (again) of Heinrich's *Spezialkarte*.⁷ The British, having boldly begun an Eastern Turkey series at 1:250,000 in 1901 (IDWO 1522), revised and completed it during World War I, incorporating data both from *Karte von Kleinasien* and from Turkish staff maps captured in 1915. By contrast, the entire corresponding Western Turkey series at this scale (GSGS 2097) was barely begun before the outbreak of the War; it amounts to an enlargement of *Karte von Kleinasien* with Turkish names now transliterated English-style. These are the most important among the few maps recommended in the so-called *Admiralty Handbooks* of 1918–1919 for Asia Minor, and they are again listed in the 1942 handbook, although now with the caution “of very little use today” (*Turkey* vol. 1, 442). Also derived from *Karte von Kleinasien* are the relevant sheets of

one British map series at 1:1,000,000 (GSGS 2555) and two at 1:500,000 (*Asia Minor* and *Ottoman Empire*).

These comments are by no means intended to diminish the perception of Débarre's achievement as an impressive one. The range of approaches to history, in both Europe and Asia, that her study links and enriches is exceptional: cartographic, cultural, economic, imperial, military, social. For classical colleagues, the insight gained into conditions in Asia Minor during the nineteenth century invites comparison and contrast with ancient communication, mapping, worldview, and more.

Notes

- 1 Compare William Ramsay's failure to convince his cartographers that a Kiepert map could be improved: *Studies in the History and Art of the Eastern Provinces of the Roman Empire* (1906), 254.
- 2 *Formae Orbis Antiqui* was envisaged as a chef d'oeuvre, but Kiepert delayed starting on it for too long; see R. J. A. Talbert, 'Mapping the classical world: Major atlases and map series 1872–1990,' *JRA* 5 (1992): 5–38.
- 3 p. 318, but with mistaken attribution and date; see the article by Klaus Kreiser cited there.
- 4 *The Troad: An Archaeological and Topographical Study* (1973), 49.
- 5 *Carte du Bassin Moyen du Yéhil Irmaç*, 1:200,000 (4 sheets, Paris, [1913]).
- 6 See Richard's brochure dated October 1901.
- 7 See Mehmed Scevki, 'Il servizio topografico nell'impero Ottomano e la moderna cartografia turca,' *L'Universo* 1.2 (1920): 127–36, with a sample of the Turkish version (1:400,000) of *Karte von Kleinasien DIII Ermenek*; my research into these maps is ongoing. On the General Staff's mapping activity, see further *Üç Denizin Arasında: Osmanlı ve Fransız Boğaz Haritaları/Entre Trois Mers: Cartographie ottomane et française des Dardanelles et du Bosphore* (Izmir, 2016), 161–71 (by Feza Günergün and Kaan Üçsu, with French translation by Eylem Alp and Ségolène Débarre).

Classical Atlas Project

Narrative Description 1990 (unpublished)

[This core section of the original application to the U.S. National Endowment for the Humanities for funding support is reproduced just as it was submitted on September 1, 1990, with minimal further editing. Its length is the maximum that was permitted.]

1. Nature and significance of the project

The University of North Carolina at Chapel Hill (UNC), in co-operation with the American Philological Association (APA), seeks NEH support to compile an *Atlas of the Greek and Roman World* edited by Richard Talbert, with cartography by R. R. Donnelley and Sons Co., and publication in 1999 by Princeton University Press. The folio volume will comprise extensive introductory material about the nature of the project, its aims and background, followed by 162 pages of color maps at uniform scale compiled by 65 experts, and a gazetteer.

This atlas will be comprehensive in its coverage, attractive to use, and priced for purchase by individuals. It seems appropriate to measure its prospects against the success of *The Princeton Encyclopedia of Classical Sites*, a comparable tool in the field published by Princeton in 1976. Since then its list price has risen from \$100 to \$215, and 3,242 copies have been sold. The outlook for the proposed atlas is even better. Because it will consist mainly of maps, rather than text, potential sales are not limited to readers of English, and certainly not to classical scholars. Specialists in all the civilizations with which Greece and Rome had contact over approximately a millennium and a half should value it; so, too, in particular should historical cartographers, archaeologists, students and travellers. Many historians of post-classical periods are sure to welcome the representation of physical landscape.

Individual maps would be ideal for reproduction in monographs and works of reference. Altogether the appeal is certain to be both international and interdisciplinary. An initial print run of 5,000 copies is envisaged, with a pre-publication price (in today's dollars) of \$95, rising subsequently to \$125; further sales at a lower price through Book Club editions can be predicted. In addition, for both teaching and research, there is every intention at a later date to exploit the marketing of maps in alternative forms such as slides, wall charts, and digitized images.

A supplementary Map-by-Map Directory, incorporating a scholarly reference for each ancient name together with its modern equivalent, will form a separate publication for specialists. This will be issued in very economical format by Scholars Press, Atlanta.

The significance of the atlas will be no less than to resuscitate a crucial branch of ancient studies which has lain strangely dormant throughout the twentieth century. Not only has the contribution that cartography can make to the study of the classical world been woefully neglected; there has also been no serious re-appraisal of what might be achieved in the light of advances in cartographic thinking and techniques. Classicists share fully the fundamental conviction of all humanists today that nothing could be more important to the study of cultures and societies than the best possible spatial awareness. Yet outside very circumscribed areas, the entire dimension which high-quality cartography can open up has been sadly missing from the perspective of most classicists. Lack of awareness of physical landscape has been particularly unfortunate. But this apart, there are many instances where maps of a region in ancient times have never been made at a scale even approaching that proposed for this volume. Not least for this reason, there has certainly been no opportunity for a detailed overall conspectus of a broad sweep at a uniform scale.

The neglect of cartography can be variously accounted for. In general, the necessary inter-disciplinary work by definition makes especially challenging demands in terms of initiative, co-ordination, and funding – not that this blend is by any means impossible to create, as the achievements of classical archaeology have conspicuously demonstrated. More particularly, however, there long persisted the very reasonable expectation that one project, the *Tabula Imperii Romani* (see further below) started in the 1920s, would meet many of the outstanding needs: only in recent years has it become patently clear that such hope is unwarranted.

Thus as a research and reference tool the *Atlas of the Greek and Roman World* will for the first time synthesize and display the mass of significant findings made by archaeologists, epigraphers and other investigators over the past century and more. As a result, even specialists will view the classical

world in a fresh light – since with the weight of modern scholarship no one individual can any longer be an expert on more than part of the total area. For the future, the influence of the atlas is sure to be lasting and formative. It will be natural for a lecture about any part of the ancient world to be accompanied by reference to, or illustration of, one or more of its maps; likewise no reader of an ancient text will be without it. No less important, it will serve to highlight the many regions where more intensive exploration is called for, and thus to stimulate enlargement of our knowledge of the ancient world. It is bound also to make a major impact upon all future scholarship relating to every aspect of such central themes as (for example) settlement, warfare, communication, trade, administration, and acculturation – all of them better understood in the light of the clearest possible grasp of physical and cultural landscape.

Astonishing though it must seem, no major classical atlas has been completed since that of William Smith issued in 1875. Since then, the initiatives have broadly speaking been on two levels – the textbook and the research tool. Production of the former has been prolific, though predictably the value to scholars is limited. Low budgets have led to the restriction, or even elimination, of such important features as generous page size, large scales, many colors, altitude tints, or contours. Moreover, with the classroom in mind, the textbooks aim not only to represent the ancient physical and cultural landscape, but also to convey in cartographic form all manner of political, economic, religious, or social matters. With a severe limit on the total number of maps, the combination of aims is unhappy, not to say irreconcilable. Each has to make room for the other: only very small scales can be used for the landscape, whilst the representation of all other matters has to remain unsatisfyingly selective. At the same time the cartography for the latter may really be too painstaking: for some of them (cult centers, say, or boundaries of Roman provinces), outline sketches can suffice, especially at a small scale.

Currently the best, “up-to-date, detailed and scholarly” volume (its editor’s own adjectives) is N.G.L. Hammond’s *Atlas of the Greek and Roman World in Antiquity*, issued by Noyes Press, NJ, in 1981. It occupies a middle position: while not to be classed with the greater initiatives reviewed next, it is still a cut above the textbooks in certain respects. The format is large (pages 11 ins. wide × 15.75), and there is some modest altitude tinting, but no contours, and otherwise little color. In further significant ways, however, this atlas resembles the textbooks. Within only 30 pages of maps (none of them double spreads) there is the traditional attempt to represent physical and cultural landscape, *and* political and other matters. Choice of the latter is extremely eclectic. Scales used vary widely, and are very small. Most areas appear only at 1:5,000,000 or 1:4,300,000. Even Greece and Italy are confined to 1:1,500,000. By

contrast the atlas now proposed will show the latter two areas six times larger, and most other areas no less than sixteen times larger.

To turn to existing scholarly research tools, the picture which unfolds is a dispiriting one. Complete coverage of the ancient world cannot be found. What has been published is either rare to the point of inaccessibility, or out of date, or both. The few items in print are all expensive. The last two attempts to create major classical atlases – by Wilhelm Sieglin and Heinrich Kiepert – were initiated as far back as the 1890s. By 1914 each had petered out, with no more than 25 of their maps issued (either individually or in fascicles) from projected totals of 34 and 36 respectively.

An international scheme to produce 56 clear and simple maps of the entire Roman Empire, based on sheets of the International Map of the World at the Millionth Scale (IMW), started promisingly at the end of the 1920s. However this *Tabula Imperii Romani* (TIR), as it came to be called, has been brought almost to a standstill by a combination of serious obstacles (cartographic, organizational, financial, etc.) which rule out the possibility of its completion within the foreseeable future, if ever at all, except in the most unlikely event of radical change to its whole conception and management. No more than four maps have appeared during the past twenty years, and the total number now existing in definitive (as opposed to provisional) form is only eleven, most of them out of print.

An Austrian *Tabula Imperii Byzantini* (TIB) at 1:800,000 scale, initiated in 1966, has so far proved more successful. Four map sheets and fully annotated gazetteers out of a projected forty have been issued, with two more announced for 1990. The scope of this series is the Byzantine world from the fourth to the fifteenth centuries A.D. Equally flourishing until its funds were cut off in 1989 was the West German *Tübinger Atlas des Vorderen Orients* (TAVO), established in 1969. The full set of 290 folio sheets was to have spanned the region from Turkey to Afghanistan, and as far south as the Sudan, from earliest times through to the aftermath of World War I. About half its projected total of 64 historical maps relating to the Greek and Roman periods have been issued, nearly all of them at very small scales which – among other limitations – prevent satisfactory rendering of the physical landscape.

2. History and duration of the project

Clearly, then, there exists no viable project to compile a scholarly atlas of the classical world. TIR might once have been expected to fulfil the need for the

Roman period at least, but no longer holds out that prospect. For all their excellence, the contributions of TIB and TAVO (the latter now wound up) are only marginal to a classical atlas. Thus the need for one, and its potential value as a reference work, remain as patent as ever. The point was stressed in the report (1980) of an APA *ad hoc* committee on basic research tools, which had made its survey at the request of the NEH and with funding from it. The present project stems from the committee's recommendation (p. 27):

We come, finally, to an area of extremely great importance, where the state of our tools is utterly disastrous, cartography. There is hardly anything more important to understanding ancient history than a clear conception of the terrain on which its events took place. But the best available maps, the old Kiepert ones, are virtually unavailable, and nothing really useful has become available for most areas in the last few decades. The *Tabula Imperii Romani* proceeds at a snail's pace, parceled out among the modern countries its sheets cover (not always those where the best scholars for the purpose are found) and appearing, when it does, in different styles everywhere. A concerted attempt to produce a uniform series of maps which show both the topography – with all the sophistication of modern cartography – and the ancient toponyms – with the accumulated knowledge of classical scholarship – would be immensely valuable.

After preliminary work by an APA board chaired by William Harris, the project started to take definite shape with the appointment of Richard Talbert as editor in early 1988. The board was restructured as a committee, and a Business Sub-Committee was also set up. At the outset the committee realized that for classicists alone to plan an atlas was unwise: a cartographer and a publisher had to be enlisted immediately. The former needed to have the capacity to handle a substantial volume of contributions over a lengthy period, as well as the flexibility to design a major work to order; experience of, and sympathy for, historical atlases would also be critical. Among the recommendations made by the Association of American Geographers, Donnelley Cartographic Services quickly stood out. An approach was made, which has since developed into an excellent working relationship. Donnelly's Senior Sales Representative, Barbara Petchenik, had played a major role in the production of the *Atlas of Early American History* (Princeton, 1976), and has continued to publish widely on many aspects of cartography. Primary responsibility for the design of the atlas now proposed has been taken by the Map Editor, Jeannine Schonta.

In search of a publisher we approached four university presses (California, Chicago, Oxford, Princeton), and were subsequently approached by a fifth

(Johns Hopkins). When all four expressed interest in varying degrees, we opted for Princeton on the quality and visibility of its work, especially in the classical field.

In contrast to all the long-term projects already mentioned, we are determined to issue a fully-bound atlas in one volume. We do not favor issuing maps in sheet form (either individually or in fascicles), or a volume with loose sheets folded into a pocket. For different reasons they appeal neither to libraries nor to most private buyers. Sheets in a pocket are not suited to rapid reference, and soon suffer from refolding. It is true that TAVO sheets are loose and not folded, so that those of immediate interest can be separated out. Yet their size still makes them unwieldy, and altogether at a projected total purchase price of over \$3,500 this was never intended to be an atlas for the private buyer.

From an editorial perspective, piecemeal issue of material over a lengthy period is sure to work against consistency of presentation. Much to its credit TAVO overcame this hazard in a way that TIR conspicuously never has. However any attempt to emulate the achievement must be considered perilous, and in our estimation it is wiser not to take the risk.

Our commitment to a volume is strengthened by recognition of the well-known difficulties faced in gaining circulation for all cartographic material except atlases – most of it issued loose and serially, and never reprinted. TIR has persistently suffered from these difficulties. Good marketing worldwide is essential. Princeton will provide this, as well as keeping the volume in print for as long as it remains in demand. In addition, knowing the immense potential appeal of the atlas, we want it priced within the range that individuals can be expected to pay in order to obtain personal copies. We do not favor a work priced so high that its circulation must in practice be confined to libraries.

If our atlas were to represent the physical landscape of so much territory in as much detail as possible, we appreciated that the compilation of new maps for the purpose (as it done by TIB) would be incredibly costly, as well as slow and complicated, and therefore should be only a last resort. Instead the ideal practical approach would be first to identify one or more existing map series at suitable scales, the relevant sheets of which incorporate the desired features. Then, if the required “separations” (individual film elements which collectively make up the finished product) could be obtained, it would be possible to create maps where the ancient data are superimposed on an existing physical base, as has been done by TIR using IMW.

In this crucial search for map bases, a variety of important practical

constraints emerged. On the one hand, the series chosen had to be not only suitable in their scales and features, but also consistent in presentation. Printing had to call for no more than five inks (otherwise costs would be excessive); similarly for economical production, the volume should be no more than folio (a larger size would be unwieldy for private use anyway). On the other hand, since modern frontiers are an irrelevance to our project, and the varying styles of each nation's mapping agency an obstacle, we soon appreciated how our purpose would only be served by one or more international map series. Of these there are few, all issued in sheets of varying size, though in every instance well in excess of folio.

However, for outlines at the very small scale of 1:5,000,000 the Global Navigation and Planning Charts (GNC) of the U.S. Defense Mapping Agency Aerospace Center are suitable. Almost the only larger-scale world series are two at 1:1,000,000 and two at 1:500,000. At each of these scales the older series of the two (IMW and 1404) cannot in fact be drawn upon for many practical reasons. But the more recent pair – Operational Navigational Charts at 1:1,000,000 (ONC) and Tactical Pilotage Charts at 1:500,000 (TPC) – suit very well, and have been adopted by us. They, too, are compiled by the Defense Mapping Agency (DMA), with some sheets contributed by its United Kingdom counterpart. The full range of sheets and separations we require is available. In each series the essentials of shoreline, drainage and contours are well represented in a generally consistent format. No more than five inks are used in printing. The sheets themselves are immense (normally 50 ins. wide × 37) and overlap slightly.

The one significant limitation is that the ONC series incorporates only the most rudimentary altitude tinting. It does show contours, but users who lack cartographic experience (such as we envisage) are liable to find them very hard to use without accompanying tints. These will therefore be provided by Donnelley. We plan, however, not to have this important addition made until the digital database currently being created for the ONC series becomes available in 1991/2, because it may simplify the process. If not, it is possible to add tints by existing means, and our budget figures are based on their use. It might be added for clarification that digitizing TPC would bring no benefit, nor is any such scheme in prospect. More generally, thorough investigation of the latest developments in computer-generated cartography has shown that for the foreseeable future these are unlikely to assist our project because of its size and complexity.

At larger than the 1:500,000 scale there exists no world map series with separations obtainable for civilian use. Thus bases for the few maps we propose at larger than 1:500,000 will be either obtained individually, or drawn specially to order.

The provision of suitable base materials naturally underpins every aspect of the atlas design, which is discussed in Section 4 below. Both the materials (as adapted for our purpose) and the design are demonstrated in the accompanying prototype map, a double spread at 1:500,000 (no. 47, "Byzantium") compiled by Clive Foss. Jeannine Schonta was cartographer, and printing was commissioned by Princeton from Meriden-Stinehour Press. Also attached are a key for the Atlas, and a locator outline map to show the full layout.

The APA has borne the full costs (\$66,839) of all this essential and extensive preparatory work, the significance of which extends far beyond the prototype map to the entire life of the project. In order to maintain the momentum generated thus far, the APA is about to commission the compilation of two further double spreads at 1:500,000 (nos. 54 and 58, "Attalea" and "Antiochia"), as well as one double spread and one single page at 1:1,000,000 (nos. 80 and 82, "Babylon" and "Lower Euphrates"). When the project is launched, the APA will contribute necessary office equipment and compilation materials to an estimated total value of \$7,540, as well as funding travel by the project director at an estimated total cost of \$16,840 [see further section 3 below].

The prototype map aside, there are 160 map pages to be prepared, together with the locator outline in a final form. The intention is to spread this work over two consecutive phases of three years each (1991–94 and 1994–97), followed by one further year (1997–98) during which the latest materials due from compilers are dealt with. Publication should follow as soon as possible thereafter in 1999: no date could be more fitting than 21 April 1999, centenary of the death of the greatest cartographer of the ancient world, Heinrich Kiepert.

As soon as the first phase begins, formal contracts will be offered to the full team of scholars who have agreed in principle to participate in the project. The contributions due during this phase, however, will be confined essentially to all those at 1:500,000 scale (with TPC bases), and some of the few others at untypical scales – altogether about half the maps in the entire volume. Separations for all the sheets necessary will be procured at once, and the individual map bases prepared from them. Compilers' submission dates during both this phase and later have been staggered to allow adequate time for compilation, as well as for an ordered sequence next of reviewing, finally of map-making by Donnelley (this final stage to include proofing and corrections). Allowing nine months on average from the submission of a compiler's draft to completion of a finished map, it will inevitably be possible to complete no more than 15 to 20 map pages by the end of the first phase on

30 June 1993.

During 1992, when TPC map bases have been completed but no materials are yet due from compilers, separations for the ONC (1:1,000,000) sheets required will be ordered, and individual map bases prepared from them in turn. Using the ONC digitized database if this proves advantageous, altitude tinting will be added.

During the second phase (1994–97), work on the final first-phase submissions will be completed. But attention will now mainly be claimed by the preparation of the remaining maps for the volume, most of them at 1:1,000,000 scale. Finally, those materials due to be submitted by compilers during the last six months of the second phase will occupy the project office and Donnelley during one further year (1997–98).

Throughout the life of the project, names, references, and other data required from compilers will be checked by the project office, and prepared in a machine-readable format which will permit typesetting direct from disk.

If the present application for the first phase (1991–94) of the project is funded by NEH, the intention would be to seek renewals for both the second phase (1994–97) and the final year (1997–8). At the same time the APA is very well aware of the need for it to raise substantial sums from elsewhere throughout. It is committed to securing these, and is confident of its ability to do so. A special development committee is being formed exclusively for this purpose.

3. Project staff

If the present application for the first phase (1991–94) of the project is funded by NEH, a project office is to be set up at Chapel Hill under Richard Talbert as project director. He will oversee and co-ordinate every stage of the work on the atlas up to the delivery of ready-to-print materials to Princeton. He will report at least once a year to the APA's Classical Atlas Committee, which in turn reports to the APA Board of Directors. He will liaise with all project personnel, as well as with Donnelley, Princeton, and Scholars Press. The APA will cover his travel to the annual meetings of its Classical Atlas Committee, as well as to Lancaster, PA periodically (for essential consultation with Donnelley's staff), and once to the United Kingdom for consultation with personnel there. To afford him adequate time for project work, twenty-five percent remission of his teaching in 1992/3 and 1993/4 has been authorized by UNC, which will also fund an alternate instructor. In addition, one-month

summer stipends in 1991 and 1994, and two-month summer stipends in 1992 and 1993, have been budgeted for.

The project office is to be headed by a project manager, whose position will be half-time from July 1, 1991 to June 30, 1992, and full-time thereafter. Once full-time, the project manager will be assisted by a secretary, whose position will likewise be half-time for the first year (July 1, 1992 to June 30, 1993) and full-time thereafter. In order to accommodate variations in the quantity of business on hand, the possibility is left open that each individual engaged half-time might vary hours of work according to demand. In addition, for approximately ten hours per week during the academic year, one Work-Study student will be attached to the project office throughout.

For supervision of map compilation the classical world has been divided into ten segments, each assigned to an expert who is referred to for convenience by the Late Roman administrator's title of *vicarius* or "vicar". The vicar's role has been in the first instance to assist in settling the layout of maps for his region, and to recommend names of compilers for each. Subsequently vicars will assume the key roles of keeping in touch with "their" compilers, responding to the scholarly queries they are sure to raise, and scrutinizing their submissions. Vicars have not been discouraged from undertaking map compilation themselves, though three have very fairly held back, in the knowledge that should a compiler default for any reason, the duty of arranging completion will lie with them in the first instance.

Vicars were sought initially from North America and seven were found, several of them involved with the project from the beginning. One man and one woman in the U.S. each declined to be vicar for the easternmost segment due to pressure of other commitments. In the case of Gaul, Edith Wightman (McMaster) would have been the obvious North American choice, but for her tragic murder. Otherwise in both these cases, as well as that of the Danube Lands, it was established that a scholar of the right caliber and range is nowhere available here.

Compilers have been identified with special care. By definition each has a thorough knowledge of his or her area and the scholarship on it; in almost every instance each is acquainted personally with the relevant vicar. Qualified North American compilers have been sought wherever possible. The work has on purpose been spread widely in order to ensure the project's punctual completion, and to minimize damage from defaults. In the approach, repeated stress has been laid upon the need for material of the highest scholarly quality, observance of the detailed instructions for compilation, and adherence to all deadlines set. Nearly all our first-choice compilers have given their acceptance in principle enthusiastically, and none of the few who declined did so because they expressed an unfavorable view of the project.

In recompense it is imperative to offer compilers and vicars remuneration which fairly acknowledges their serious commitment. The standard amount for compilation of a page has been set as \$2,500, with somewhat more for a few very demanding maps, and frequently less for undeveloped areas. This honorarium is payable in three installments, with the bulk of the money forthcoming only on punctual submission of satisfactory material. Vicars, wherever they supervise compilation of a map, receive a sum representing about ten per cent of the compiler's honorarium, payable on completion of the work. Where a map is compiled by a vicar, he is paid as a compiler only. All compilers and vicars receive modest fixed sums for their working expenses.

As already indicated, whenever a compiler delivers material contracted for, it is scrutinized by the responsible vicar. In addition, as a matter of course, the editor will submit it for review to a qualified scholar who is neither a vicar nor a compiler. By definition, this check is particularly important when a map has been compiled by a vicar. Seven scholars (four of them former committee members) have agreed to act as a core-group of reviewers; nonetheless the expectation is that many maps will be referred elsewhere for review. Reviewers will be asked to report within three months for a standard fee.

4. Project methodology

In nature and scope the atlas must meet the principal needs of most potential users, while remaining affordable and capable of completion within the not too distant future. In the light of the efforts reviewed in section 2 above, we are convinced that the aim should be to represent the physical and cultural landscape of the entire Greek and Roman world as fully and accurately as possible, with a minimum of variant scales and without accompanying text. Thereby not only will the huge mass of scholarly findings made this century at last be presented in cartographic form; their physical setting will also be rendered in detail. In our opinion this pathbreaking task is a sufficient goal for the volume. Thus we have no place for maps addressing political or other matters, which are well enough provided for elsewhere. For similar reasons we concluded that battle sketches, city plans, and the like, could not justify the immense amount of extra work of a different character that their inclusion would entail. Equally, maps of how Greeks and Romans themselves may have visualized their world are not apposite.

This choice constitutes an effort to reconcile the ideal and the practical in fulfilment of the greatest needs. We recognized that the more ambitious the

atlas, the longer its compilation time would become and the higher its cost. The wider the scope, the more awkward it would prove to select matters for inclusion. Above all, the greater risk there would be of merely repeating the established pattern of earlier classical atlases, with their unsatisfying combination of aims and material. In short, a re-thinking of traditional goals has been necessary, as well as an acknowledgement that an atlas is no more able than any other book to meet every conceivable ideal.

Coverage of the entire Greek and Roman world entails likewise embracing the full timespan of both civilizations. For our purposes this is to be from the end of the Bronze Age (variable, but no later than c. 1100 B.C.) to c. A.D. 640. Thus the beginning follows the disappearance of the Minoan and Mycenaean civilizations in Greece, while at the end Rome's eastern empire is on the verge of collapse, and the evidence for both western and eastern affairs tails off abruptly thereafter. Within this millennium and a half, however, coverage of any region is limited to the period for which it was occupied by Greeks or Romans, or had significant contact with them.

It was decided to adopt the largest economical page size (folio), which allows maps of up to 17 ins. tall, and 11.5 wide on a single page, or 24 on a double spread running across with no break except the "gutter" for binding (invisible to the user). On each page the design assigns maximum space to the map; the Key is a standard one, and not repeated page by page.

For scale, in neither case was exclusive use of 1:1,000,000 or 1:500,000 considered desirable. The former does too little justice to the more developed regions; the latter, quite apart from requiring four times as many pages (with the obvious impact on compilation and cost), is too generous to many zones of forest, mountain and desert. A mixture of the two scales, however, is appropriate for most of the land area: hence the decision to show the more developed regions at 1:500,000, the less developed at 1:1,000,000 (149 pages in all). Exceptionally, the environs of Athens, Rome, and Byzantium/Constantinople are to be shown at significantly larger scales (5 pages). By contrast, the easternmost regions penetrated by Greeks and Romans appear at only 1:5,000,000 (8 pages), because here current knowledge is so slight in relation to the vast expanse of terrain.

In fixing the layout of the atlas, highest priority has been given to ensuring that each map does as far as possible make geographical and cultural sense in ancient terms. By good fortune this can be satisfactorily achieved within the ONC/TPC sheet configuration. In only a very few instances must a map be made up from two adjacent sheets, thus requiring the delicate procedure of "mosaicing" (splicing together of two sets of separations). Overall the layout marks a vital improvement upon that of TIR, which has seldom departed from the far less accommodating configuration of its base series IMW.

Since each region normally appears once only, we recognize the challenge faced by the compiler in representing on a single map anywhere not occupied for all, or almost all, of the period which the atlas embraces. For this reason color codes have been developed which allow five main periods to be distinguished, as the Key shows. Investigation of such alternative devices as a series of maps, or overlays, to show the same region at successive periods proved them to be neither practical nor economic.

Instructions for Compilers request that all take the same approach irrespective of the scale at which they are working: the “busier” a map is expected to be, the larger the scale that has been assigned to it. Particular attention is to be paid to changes in landscape since ancient times. While acknowledging the difficulties in this regard, our intention is to reflect the ancient landscape insofar as possible, not the modern in the manner of TIB. In the many regions where more manmade (“cultural”) features from ancient times are now known than could ever be fitted comfortably onto any map at our scales, compilers are instructed to mark only what they deem significant. The choices are sure to vary between different segments of the ancient world, and the vicars in conjunction with the editor will play a vital role in establishing norms. But however taxing such exercise of judgment may sometimes become, it is an essential part of making the atlas comprehensible and accessible for its intended users.

This paramount concern has likewise governed the decision to limit the number of symbols and to ensure that none is unduly obtrusive. In their different ways TIR, TIB and TAVO have all been less restrained in these respects, and in our opinion users suffer as a result. It goes without saying that some effort must be expected in the comprehension of any scholarly map, but a stage is reached where further complexity only serves to cause confusion. There is a limit to the variety of information which a map may reasonably convey, and respect must be shown for it. The point applies with all the more force to an atlas (like ours), which purposely does not wish to resort, for example, to extensive use of special inks and consequent increases in both costs and production difficulties.

Several minor features are therefore to be deliberately omitted (for example, find spots of inscriptions, coins, pottery), as well as all territorial boundaries. The latter can seldom be traced accurately in any event, and would be liable to introduce a bewildering, multicolored maze into many maps. In the case of large divisions, such as provinces of the early Roman Empire, an individual map seldom includes enough of a boundary to render it meaningful. On the other hand, we believe it important to incorporate (and have done so economically) symbols indicating, for example, the authenticity of names, alternative names, and variant spellings; relative sizes of settlements and

degrees of certainty about their location; and the same with regard to the size and course of such features as rivers, roads, aqueducts.

Finally, compilers are asked to furnish one scholarly reference for each ancient name or site marked, together with the equivalent modern place name. The ancient names (only), accompanied by their page numbers and grid references, make up the comprehensive alphabetical gazetteer at the back of the atlas. The additional information is reserved for the supplementary publication by Scholars Press, in which the names appear alphabetically map by map, rather than in a single comprehensive list. This Map-by-Map Directory is too specialized to warrant its inclusion in the atlas itself, with consequent considerable enlargement of the volume. The Directory is designed above all to open the way for investigation of the ancient evidence and modern writing on any name. For the information of fellow scholars, compilers may also take the opportunity to list here (with references) any names of places known to have been within the general area of the map, but impossible to mark on it for lack of sufficiently accurate information. The prototype map attached to this application is accompanied by its Directory entry.

Classical Atlas Project

Instructions for Compilers 1990 (unpublished)

[This Appendix 13 in the original application to the U.S. National Endowment for the Humanities for funding support is reproduced just as it was submitted on September 1, 1990.]

1. General concerns

As you read these instructions, please bear in mind that they are drafted (inevitably) at the beginning of a lengthy undertaking, and as such cannot hope to anticipate every problem which may arise. Completion of the prototype map has helped the formulation of policy on many matters, but altogether the atlas has 160 more map pages extending to the furthest reaches of the classical world, to be compiled by 65 or more different scholars. These numbers make it essential that you do, as far as possible, follow the instructions below in the interests of uniform presentation. The greatest importance is attached to this. Wherever you judge for good reason (not just your own preference) that the instructions cannot or should not be followed, please consult your vicar and/or the editor before proceeding; if it could be helpful, bring the matter to the attention of the compilers of adjacent sheets too.

As these last remarks suggest, please go out of your way to make contact, and stay in regular contact with, fellow participants in the project – especially your vicar and the compilers of maps adjacent to your own. Don't hesitate to take the initiative in writing to the addresses on the *Names and Addresses* list supplied (periodic updates of it can be expected). The editor, too, will be equally delighted to hear how you are progressing, or even not progressing.

The latter possibility leads naturally to the matter of deadlines. As you realize, in such a large collaborative project it is crucial that the deadlines

which we all agreed to in our contracts be respected. If delivery dates are not met, the consequences are potentially serious both for the project itself, and for fellow participants who *have* delivered on time. Should the project slip behind schedule, its case for renewals of funding is weakened; and this is a project which can only continue with grant aid. At the same time our cartographic supplier, R. R. Donnelley and Sons Co., is a commercial firm, which cannot afford to assemble resources for dealing with our material, and then find itself facing postponements. Finally on this point, the atlas by definition cannot be published until every map is ready: delay hurts those compilers who have been punctual, and understandably want to see their work in print. So please keep in touch – with your vicar especially – about progress at every stage. Early submission of material is most welcome! On the other hand, if you are not up to schedule, please don't leave it too late before consulting your vicar and/or the editor about possible remedies.

For each map the name(s) of the compiler(s) and the date of submission will be published. Obviously you can only reflect the state of knowledge about your area at, or near to, your submission deadline. To be sure, this does mean that your map may not be absolutely up-to-date at the time of publication, but it cannot be helped and should not become a cause of dissatisfaction or delay. Scholarship is always moving on, where reference works have to stand still. In the case of this atlas, there is already more than a century of intense scholarly activity to sum up: this is ample justification for its compilation. True, the activity has been uneven, but this likewise is no justification for delay. We all recognize that the published volume will prove fuller and more accurate for central Italy or the Peloponnese, say, than for Spain or Iran.

For your work you are free to enlist as much (or as little) assistance from others as you wish. In particular, by all means negotiate with the compiler of an adjacent map about exchanging, or giving up, or taking over, pockets of land so that the more knowledgeable partner there compiles for each. Inevitably the world does not always divide up neatly between different individuals' special areas of expertise.

If you would like the name(s) of one or more assistants to appear in the printed list of map compilers below your own name, please inform the editor. Do the same if you would like part of the honorarium due to you to be paid direct to one or more assistants instead. However, if you do use a considerable amount of help, it must be understood that full, final responsibility for the map at every stage remains yours in accordance with your contract. Every query, review, proof, etc., goes to you, and responses must come from you.

The role of each of the ten vicars is to oversee and co-ordinate compilation work in the ten different segments into which the ancient world has been divided (purely a division of convenience, for this purpose only). "Your" vicar

is the first recourse for queries relating to your work. Of course, you are in no way precluded from consulting the editor on any matter, but when it comes to scholarly issues affecting compilation in particular, you normally do better to approach your vicar first. He has an especially important role to play in identifying and settling regional concerns – since, as we are all aware, these vary across the ancient world.

As your contract says, you are obliged not to submit your completed compilation materials to the editor without first having gained your vicar's approval of them. So when planning ahead to meet the submission deadline, it is vital to leave adequate time for the vicar to comment on your draft and for you to make adjustments. Naturally, if you have indeed been keeping in touch with your vicar throughout as expected, the final check by him is likely to be a straightforward matter.

Overlap between maps frequently occurs, and if it is of any notable concern to your compilation work, this should already be pointed out elsewhere. However, please check yourself on the *Locator Outline* and in the *Layout of the Atlas*. If the overlap between your map and an adjacent one is no more than tiny, do take the initiative in settling with your “neighbor” who it is that will make the compilation of the overlapping slice – material which can then simply be taken over by the other compiler.

Overlap is most often found where a map at a smaller scale (normally 1:1,000,000) overlaps with one at a larger scale (normally 1:500,000). In these cases the compiler at the larger scale by definition takes the initiative, because the larger-scale maps are all due first (see *Deadlines for Compilers' Submission of Material*). The compiler at the smaller scale should then draw upon the relevant completed larger-scale map, and (for such overlapping areas) need only mark the sites or names or features of greatest importance. Users who want more detail in an overlapping area will be referred to the larger-scale map of it.

As this last point implies, where anything more than a tiny area on a map appears elsewhere at a larger scale, readers' attention will be drawn to the fact. In addition, as a matter of course, arrows and map numbers on all sides of each map indicate the whereabouts of any continuation (see prototype map). The *Locator Outline* map will be part of the atlas, but there will not be any small locator maps on each page or spread.

2. Compilation: the scholarly aspect

This is the aspect on which any set of instructions can inform you least: it goes without saying that you know more about the area you have undertaken to map than any other participant in the project. That said, the *Map-by-Map Directory* entry for the prototype map illustrates well the rigorous collection and assessment of all relevant evidence which is expected. Sources are literary, epigraphic, archaeological, and so on. Obviously the relative importance of each type of source will vary from area to area. Whatever the mix, some general points on this part of the work can be made.

Using the modern printed sheet map of your area (to be supplied), it is essential to hunt down all identifiable changes to the landscape since ancient times. Each map in the atlas will reflect the ancient landscape so far as possible, not the modern. Of course the difficulties of knowing just how and where the ancient landscape differed from the modern are well appreciated, and the point will be made in the Introduction to the atlas. If there is no knowing in a given location, then the policy is that the modern lines on the map perforce stand. If you *know* that the ancient landscape was considerably different from the modern over an important or extensive area, but have no notion at all of what the ancient lines were, please formulate a recommendation on how this knowledge should most usefully be conveyed, and forward it to your vicar and editor for discussion. If you know that the ancient landscape was different from the modern and can sketch its lines with more or less confidence, do so (see *Key*, and further below on the technique). Always remember that instructions to the cartographer for removal of a feature must be accompanied by instructions on how to fill the void created.

The outside limits of the timespan covered by the atlas are the end of the Bronze Age (variable, but no later than c. 1100 B.C.) to c. A.D. 640. Activity outside this span is not to be recorded. Moreover, within this span an area is to be shown only for the period when it was occupied by Greeks or Romans, or both, as well as when it had notable contact with them.

The intention is that all compilers take the same approach regardless of the scale at which they are working. At the same time the greater the number of significant manmade (or “cultural”) features estimated to lie within an area, the larger is the scale that has been chosen for it. Each map should show every site of settlement or activity significant for Greeks or Romans (or both), or for contact with them, during the timespan just cited. “Cultural features” have individual symbols as listed in the *Key*, and five main periods of activity can be distinguished.

In all this the adjective “significant” is crucial. There is no question that it must be subject to varying interpretations according (e.g.) to the density of the ancient population in an area, the level of current knowledge (from whatever sources) about it, and the scale of the relevant map. In those parts of Gaul, for

instance, where there is now evidence of ancient settlement on average every square mile, a policy of selection manifestly has to be adopted. The atlas is not designed to give its users every detail of settlement in such an area, since its scales are nowhere near large enough. That apart, maps which are so cluttered as to become incomprehensible lose their value. To establish norms of “significance” is a fundamental issue which vicars will be addressing in consultation with “their” compilers (and with fellow vicars and the editor) as early as possible. In the light of all the relevant circumstances variations will, and should, occur between regions.

From the outset you should also be alert to the different, but still important, problem of names or other features (e.g. a road) which are known to have belonged within the confines of your map, but in your judgment cannot be located with any degree of confidence, and therefore must be left off the map altogether. Some tough decisions are sure to be called for, but it is only right to take them responsibly. The *Key* does allow various types and degrees of uncertainty, but with some names or features it will just be misleading the user to put them anywhere at all without the emergence of fresh evidence. However, for the benefit of the scholarly community it will be most valuable to confirm their omission, and they *do* belong in a special category in the Map-by-Map Directory (see below), so that you need to take them into account from the outset.

The atlas will not show the findspots of inscriptions, milestones, coins, pottery, kilns, shipwrecks. Like its map bases, it is not nautical. On land *no* territorial or provincial boundaries are to be shown either, though regional names should straddle the appropriate areas.

3. Style of presentation

The Greek or Latin name of a settlement or feature should be given where possible. If users should particularly value having the name in another ancient language too, and it can be accommodated without overcrowding, give it (This is another issue on which vicars may be concerned to establish regional norms). In less important instances, names in other ancient languages can be kept for the Map-by-Map Directory. However if a name is known only in another ancient language, give it thus.

If no ancient name is known at all, and you want to provide the modern name of the site in the Gazetteer, number the site on the map. Each such combination of number + modern name will be listed under the map title in

the Gazetteer (the modern name appearing in italic there).

The marking of modern place-names on a map should be kept to a minimum – generally to be reserved for *important* sites identified thus because their ancient names are either unknown or very uncertain (e.g. “Fishbourne”). A site with a modern place-name given does not need a number also. In some areas (especially “empty” ones), where it is considered important for users’ orientation, a few exclusively modern places may be marked and named. But for most modern names consultation of the relevant ONC/TPC sheet, and/or of the Map-by-Map Directory is to be expected (to link up with the numbers on the map, as explained above). Any modern name that does appear on a map will be listed (in italic) in the alphabetical order both in the Gazetteer and in the Map-by-Map Directory.

For the symbols, see Key. If a pressing need emerges for other symbols on your map, consult the editor. The range of symbols is deliberately restricted, and each is of modest size. Relative size of (e.g.) towns or forts is conveyed by the type used for its name or number, not by the size of the symbol.

The name of a place or feature attested in only one of the five periods of activity should be marked to appear with a colored underline. Alternatively, where a feature has no name (e.g. a road or aqueduct), it can usually be marked in the appropriate color itself. The appearance of any name or “cultural” feature on the map, whether in a period color or not, of course says nothing about how long (or how short) a time it was actually occupied for or used.

All the atlas text is to be in English. However on the maps Latin terms are retained for *familiar* physical features; this applies even when the actual name of the feature is Greek. For whether a term should be given in full, abbreviated, or omitted, see below:

Colonia: give abbreviated as Col.

Fluvius: omit except when there is some special reason to include it. In such circumstances always abbreviate, using fl.

Insula: omit except when there is some special reason to include it. In such circumstances always abbreviate, using Ins. for sing., Inss. for pl.

Lacus: only spell in full if there is room; otherwise abbreviate L.

Mare: spell in full.

Monasterium: always include, using the abbreviation Mon.

Mons, montes: only spell in full if there is room; otherwise abbreviate M. for either sing. or pl.

Monumentum: give in abbreviated form monu.

Promunturium: always include, using the abbreviation Pr.

Sinus: spell in full.

Templum: always include, using the abbreviation T.

Via: spell in full.

Give Greek names in their Greek form (transcribed literally, retaining “k”, though without marking long vowels); however, if there is a *familiar* Latin form, use that in preference. Give Roman names in their Latin form (always using I, not J).

Spelling of names in other ancient languages: consult your vicar and the editor for norms.

Spelling of modern names: unless otherwise instructed, follow the form used by the latest edition of the Defense Mapping Agency *Gazetteer* for the modern country concerned.

All measurements must be given in feet and miles.

Spot heights: General policy is to omit them. But if you have special reasons for retaining any, alert the editor (with the understanding that this must be something exceptional).

4. Compilation: the cartographic aspect

A printed copy of the part of the modern sheet on which your map is to be based will be supplied at the outset. As soon as possible thereafter you will be furnished with copies of the essential base elements for your purpose at full size. Some delay in delivery is unavoidable because of the volume of preparation work involved for Donnelley. But if your map has a TPC base, the elements ought to reach you by late 1991; otherwise, for GNC and ONC bases, during 1992.

There are four components (pieces of film) to the base: (a) shoreline and rivers; (b) water tint and drainage symbols (e.g. swamp); (c) contours; (d) selected modern “cultural” features, and map grid. All these elements are on plastic or film, both of which are more stable than paper. All are punched along the top, and a set of metal pins is provided to allow you to register elements together, so that as many as you wish at any time can be laid precisely on top of one another.

If you do not already own a “light table,” or have access to one through (say) a Geography department, you are strongly recommended to seek one out or to buy one with your funds for expenses. It will be an invaluable help in compilation.

You will be provided with pencils (which should be kept sharp all the time), and with six sheets of herculene to be used as overlays. These are plastic with a

frosted side, which is the one to be drawn upon. The sheets of herculene will come registered so that they fit exactly over your other elements.

For clarity and efficiency, you are asked to use each overlay as follows:

1. Mark all shorelines, rivers, canals, etc., that you want deleted. Use the PURPLE pencil.
2. Draw precisely all new linework, or realignments of shore, river, etc. If you are adding a lake, append a note specifying that water tint be added at the appropriate location. If you have deleted a modern body of water (e.g. reservoir), try to establish from earlier maps the alignment of the pre-existing river(s) and the shapes of contours. If no such maps can be found, request the cartographer to approximate, showing features with dashed lines.
3. Draw all thematic linework (see further below), using BLACK pencil for roads, BLUE for aqueducts, GREEN for canals, PURPLE for walls. Include a legend on the overlay, confirming which pencil has been used for which feature, to avoid any misunderstanding. Where the alignment is known, make a solid, unbroken line. Where the alignment can only be approximate, still use a solid, unbroken line, but with small ticks (similar to the standard symbol for a railroad). Such a line will appear dashed on the final map, but in your compilation it should *not* be broken. If linework belongs to a specific period, make notes to that effect using the appropriate letter designation (see below) along the entire length concerned.
4. Mark on names of regions and of tribes precisely where you want them placed. Use BLACK pencil for regions, PURPLE for tribes.
5. Mark on all point symbols (settlements, road stations, etc.) and their accompanying names/ numbers. Use BLACK pencil for ancient names, GREEN for modern ones. Draw the same symbols as in the Key.
6. Mark on names of all physical features (promontories, mountains, islands, etc.) precisely where you want them placed. Use BLACK pencil.

Where any name is to be underlined in a period color, put its period abbreviation in parentheses after the name – using the letters A, C, H, R, L for the five successive periods (see Key). *Always* keep to this lettering – i.e. even if a place is Sasanian, still use L.

Ensure that the name on an overlay appears exactly as you wish to see it on the final map. Pay particular attention to the order in which you place alternate names. Be sure to print each name as you wish to see it appear – all caps, or cap. and lower case.

Completed overlays should be accompanied by a type list of names divided

into the following categories:

Point symbols, by size (see Key) [#1 (largest), #5 (smallest)]: names for point symbols include settlements, temples, monasteries, etc. *Exclude modern place names.*

Modern place names

Region names, by size

Tribe names, by size

Open Water names, by size

River names, by size [Prototype map uses two; more are possible]

Physical features, by size (including island names)

If further kinds of name are outstanding, add a clearly identified list for that category.

Again, check that all names are printed in the list as they should appear on the map. Also in the list append the relevant period abbreviation (A, C, H, R, L) for any name that is to have a color underline. If there are discrepancies between the overlays and the type list, the cartographer will follow the latter.

Draw linework exactly as you wish it to appear, being extremely precise throughout. The cartographer's role is to reproduce just what you have drawn: this will be done directly over your markings. It is for *you*, therefore, to pinpoint which side of a contour line a road went, or on which side of a river a settlement lay. Equally, if you mean a settlement to be on a road or at the seashore, check both overlays concerned to ensure it is there and not even a short distance apart. If you mark it in the latter way, so will the cartographer. *Don't* assume that minute changes will be easy to make later: they will not be.

The one, minor initiative which the cartographer will show for double spreads if necessary, is to take into account the placing of the cut that creates two pages with a "gutter" for binding (invisible to the user) between them. For obvious reasons most symbols cannot be placed right on the cut, nor should names in smaller type straddle it. Any shift is likely to be tiny. The cut is made only after final proofing.

5. Gazetteer and Map-by-Map Directory

Your completed materials for the cartographer should be accompanied by a further list for the Gazetteer and Map-by-Map Directory. If this is prepared on a word processor and you can supply a copy of the disk, that would be

appreciated. The list made for the prototype map is a sample illustration.

It is in the first instance a single alphabetical rearrangement of the separate lists made for the cartographer. Every name (ancient, and modern if any) marked on your map should be included, with the relevant period abbreviations appended. All ancient names should be in full capitals, modern ones in cap. and lower case. The project office will add grid references from the final proof (see prototype map), and they and these names will be fed into the disk for the comprehensive Gazetteer which appears at the back of the atlas. Precise co-ordinates of ancient sites are not to be given; however, for modern equivalent places (not always in quite the same spot), reference can be made to DMA *Gazetteers*, which give co-ordinates to the nearest minute.

For scholars' use, however, there will also be a Map-by-Map Directory, repeating all this information on a map-by-map basis. In addition here, the modern equivalent name for each ancient one will be given (normally following DMA *Gazetteer* style), plus one reference to scholarly work on the site. In the case of well-known places or features it is quite sufficient to cite Pauly-Wissowa or some other standard compendium. In all instances the reference given does not necessarily have to be the very latest word: the principal concern is to give the best lead for the reader to follow in order to tap the relevant ancient evidence and modern writing.

At the end of this list of numbers and names marked, you should append a separate alphabetical list of the ancient names and features known to be somewhere within the area of the map but impossible to locate, plus a scholarly reference for each. You may likewise wish to give bibliographic references to document your placing of features which cannot be conveniently identified by any name or number; roads are the obvious example. In any event include a key of all the works you have referred to in abbreviated form.

6. After submission

The editor and his staff in the project office will check all submitted materials and references, and (later) examine proofs. All submitted materials will be sent for review by a qualified scholar who is not participating in the project as either vicar or compiler. Every compiler is obliged to respond to the report, and (later) to proof his work punctually to the editor's satisfaction. Compiler's changes in proof are to be kept to an absolute minimum.

CONTRIBUTOR	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
APA Members' Giving		3,190	4,814	3,205	2,500+	?	?	?	?	13,709+
AIA	15,000				4,000	4,000	4,000	4,000	4,000	35,000
Arete Foundation			5,000	10,000	10,000					25,000
Barrington				10,500	125,000	250,000	225,000**	200,000***	200,000***	1,010,500
Delmas Foundation				25,000	25,000					50,000
Earhart Foundation					7,500					7,500
Goldsmith Foundation				20,000	20,000	20,000				60,000
Gould Foundation			25,000		10,000					35,000
Individual Giving				1,650	650					2,300
Kress Foundation		15,000	15,000	15,000	15,000	15,000				75,000
Levy Foundation					10,000					10,000
Cockey Lodge Found.				10,000	5,000	5,000				20,000
Magie Pub. Fund			10,000	5,000	5,000					20,000
Mellon Foundation				100,000						100,000
NEH (outright)	150,000		159,507		130,000					439,507
NEH (match)	62,000		253,961		125,000	250,000	125,000			815,961
Replogle Foundation		5,000	5,000	5,000	5,000	5,000				25,000
Scholars Press				12,500	12,500	25,000				50,000 ^a
Small Firm/Acad. Gifts ^b			151	500	1,500					2,151
Spain's Ministry Culture			5,000	3,000						8,000
UNCC	1,000	1,000	2,000	2,500	2,500	2,500	2,500			14,000
Malcolm Wiener Found.					10,000					10,000
Total	228,000	24,190	485,423	233,855	516,150	576,500	356,500	204,000	204,000	2,828,628

^a \$1,500 and under (Clugman, Craven, Danish Academy)

^b \$100,000 prospective

^c Prospective

10

Classical Atlas Project

Half-yearly Reports to the U.S. National Endowment for the Humanities, August 1991–May 2000 (unpublished)

[These reports are presented as they were submitted, with minimal further editing. However, references to the technicalities of NEH's reporting requirements have been dropped. Also, personal names have been removed where confidentiality must be maintained (most notably, the names of map reviewers); the occasional sentence has had to be slightly reworded in consequence.]

The titles and numbers for maps have not been updated to reflect changes to both that occurred over the course of the project, in particular as further maps were added to increase the original total and as the atlas layout was modified. For the locator outline originally (1990), as modified in 1994, and on publication in 2000, see item 12.]

August 1991–January 1992

The first half-year following the project's full launch on August 1, 1991 has been active and rewarding. Some difficulties have been encountered but they have been overcome: none acts to delay the project schedule.

A range of priorities needed to be tackled. In particular, the launch made it imperative to fix the atlas layout with complete precision. In consultation with Princeton University Press the page size was re-checked. At the same time the opportunity was taken to address several concerns which had been expressed about map coverage, as well as to remove excessive overlaps and other infelicities. The new layout calls for 165 pages of maps rather than 162, but offers notably better coverage and more effective use of space without radical change to the previous version.

A new draft locator outline map has been prepared in consequence, and is attached. It should be noted that all the maps shown at 1:5,000,000 are subject to further adjustment, and that a Mediterranean overview at this scale is to be added, as is a double spread on its side at 1:1,000,000 for the Hejaz region in N-W Saudi Arabia. Minor improvements not shown have also now been agreed in the area of E. Algeria and W. Tunisia. The revision has re-directed attention to the difficulty of formulating a satisfactory order of appearance for the maps in the atlas. The director is preparing fresh proposals on this important, albeit not urgent, issue for circulation shortly.

Formal contract offers were sent to all 70 or so scholars who had previously indicated that in principle they would be willing to compile one or more maps. It is pleasing to report that almost all formally accepted the offer made to them. A few did decline, but in every case because of pressure of other commitments, not out of disenchantment with the project. First -class replacements have been engaged in nearly every case. Currently there are only seven map pages for which a compiler is not yet under contract, and most of these carry a completion deadline of 1995 or 1996.

It is less pleasing to report that a delay has occurred in sending compilers the first payment due to them under contract, although this is now rapidly being remedied. The delay sprang from a conviction that the American Philological Association as sponsor ought to strengthen its own direct participation in the project by making all such payments (under sub-contract to the University of N. Carolina) rather than merely leaving them to be made by UNC as institutional grant administrator. This shift of responsibility calls for a budget change which is supported by APA and UNC, and is shortly to be forwarded to NEH. If approved, the change would also in fact reduce the cost of the project.

Launch of the project permitted renewal of the delicate quest for crucial film elements (to make up map bases), which perforce had to be suspended during the Gulf War. Fortunately they can once again be teased out of both the Defense Mapping Agency and its United Kingdom equivalent; R. R. Donnelley and Sons Co. (cartographic supplier) is able to make up the required bases quite speedily once the elements arrive. So far about 17 pages of maps (all at 1:500,000) have been delivered to their compilers, and more are being worked on. This is a satisfactory rate of production. Meanwhile all compilers have been equipped with printed sheets of the relevant maps covering their area.

Good progress is reported by the four compilers of the first two double spreads due for delivery (at the end of 1992).

With the project launched, the Archaeological Institute of America, the American School of Classical Studies in Athens, the American Academy in Rome and the British Academy were asked to join the APA in sponsoring it (without financial obligation). The last still has the matter under favorable consideration. The others have all formally given their enthusiastic agreement.

From contact with the Secretariat of the Union Académique Internationale (in Brussels, Belgium) the director has learned that the Union's *Tabula Imperii Romani* project would like to explore the possibility of a link with the APA *Atlas*, and he has indicated a willingness to engage in discussions. He has also pursued exhaustively the concern expressed by NEH's reviewer #4 for the project that "a similar project, organised by an Italian scholar and with a team of scholars from Europe and the Near East, is at present being developed. If it goes ahead as planned, it should certainly be published long before 1999". From well-informed sources in Italy he has established that no such project has gone ahead. Moreover, to expect that any work comparable in coverage and quality to the APA *Atlas* could achieve publication "long before 1999" seems unrealistic.

The director lectured about the project in Copenhagen, Aarhus (Denmark) and Lund (Sweden) in December 1991, and at the University of California, Los Angeles, and the University of Southern California in January 1992. He also accepted an invitation to visit the Vocabulary Coordination Group, Getty Art History Information Program, Santa Monica, CA. In December he reported on the progress of the project at a meeting of the APA Classical Atlas Committee held in Chicago.

Efforts to attract gifts which will secure the matching funds offered by NEH are being pursued vigorously. Several applications and approaches are in train. The Archaeological Institute of America has already given \$15,000. The APA has earmarked \$3,500 for the design and production of a brochure to assist in fund-raising, and this work is being started.

With NEH funding confirmed it was possible to initiate a search for space in

which to establish the project office in Chapel Hill – no easy task because the university eventually declared itself unable to offer anything on campus, and the next alternative, off-campus space in the downtown area which satisfies the state's standards, is at a premium. With persistence, however, it did prove possible during January 1992 to secure an attractive, self-contained space of approximately 700 sq. ft., divided up into three medium-sized offices and one larger room, in a small, modern building with good access and only 5 to 7 minutes walk from the director's departmental office.

Renting space, however, turned out to be straightforward by comparison with hiring a Project Manager. In the first instance it took four months to overcome the objections raised by Personnel Classification to creating and advertising this half time post at a level and salary in accordance with the project plan and budget already approved. Further obstacles next created by Personnel Recruitment were relatively modest, but they compounded the delay. At least it was encouraging that the post attracted several well qualified applicants. After careful review of them all, Susan P. Jenny stood out as possessing the best combination of qualities and experience. Her acceptance of the post from February 24, 1992 marks an important, and very welcome, step forward for the project. Her first concern will naturally be to start setting up the office.

February–July 1992

The second half-year following the project's full launch on August 1, 1991 has been no less active than the first, and the initial good progress has been sustained. Preparations are now well advanced to submit a renewal application to NEH for 1993–96 by the September 1st deadline. One tragic blow should be recorded at once, however: the death of Barbara Petchenik, Donnelley's Senior Sales Representative and Account Executive for the Atlas, on June 7th (from cancer). She played a formative role in assisting the development of the project from the outset, and remained keenly committed to its successful realization. Her place as Account Executive is taken by Keith Winters.

The director has prepared a fresh scheme for the maps' order of appearance in the Atlas. Its most striking new feature is the introduction of six Parts, each headed by a regional locator outline. This arrangement serves to ease the problems of settling upon a satisfactory order, as well as giving users more convenient access to the maps.

The co-ordinates of the maps at 1:5,000,000 have now been established, and

one further page at 1:500,000 has also been opened up. As a result the southernmost part of the Italian peninsula will be shown on a double spread instead of a single page. This modest re-arrangement improves presentation of the region, and eliminates the need for some awkward mosaicing work. The Atlas will consequently comprise a total 166 map pages, although the volume itself will not be lengthened: instead one page which would otherwise have remained blank will now carry a map. These adjustments, and the numbering of each map, will be incorporated into the locator outline currently in preparation (revision of the draft attached to the previous report).

Responsibility for the compilation of all but part of one map has now been settled. Even this single outstanding difficulty arises from a scholar who had agreed to act, but then changed his mind; the matter ought to be cleared up shortly.

NEH duly authorized the budget change sought by UNC, whereby payments to compilers and vicars would be made by APA under sub-contract rather than by the University. As a result it was possible to proceed with making these payments, and nearly all of the large number of sums due at this stage have now been dealt with; the remainder are being processed.

The supply of film elements from DMA and DMS (London), and their make-up into Atlas map bases, have both made excellent progress. Bases have now been prepared for 61 of the 70 pages at 1:500,000 scale. Elements for the five TPC sheets which make up the few remaining pages at this scale are due to reach Donnelley by the end of August, and will be worked on as soon as they are received. Prices have meanwhile been obtained from DMA for a first batch of ONC sheet elements, which will be ordered as soon as the last TPC batch arrives (experience shows that one order of modest size at a time seems to offer the best chance of success). An order is simultaneously being made to DMS, and two further orders will go to DMA.

The director accepted an invitation from the Union Académique Internationale to participate in a special *Colloquio* hosted by the Accademia dei Lincei, Rome (Italy) to discuss the current state of the *Tabula Imperii Romani* and possible future directions for it. In many respects the experience only hardened the reluctant conviction that TIR will never fulfil its promise. First, after everything had been arranged for April, the date was then changed to May! At the meeting itself the magnitude of the obstacles in the way of TIR's completion seemed to be quite underestimated. It was indeed heartening to see a new sheet (K-29, N-W Iberian peninsula), just published in Madrid, but then sad to realize that Portuguese territory had been left blank by the Spanish compilers in this specifically international project, because they would not or could not collaborate with their neighbors. Although there was keen interest in the presentation of the APA project, the meeting (bafflingly) could see no

potential links between it and TIR.

It was a surprise, therefore, when the proceedings concluded with a strong recommendation that the APA project seek the patronage of UAI alongside TIR. An application was made by the U.S. delegate, Prof. M. Caviness (Tufts University), at its annual meeting in June. UAI procedure holds over the vote until the following year (June 1993), but accounts of the General Assembly's discussion give every reason to expect a favorable outcome then. While UAI's patronage is academic rather than financial, there is no doubt that it confers notable recognition and distinction upon the work of the project, and raises its profile internationally.

In addition to speaking in Rome, the director lectured about the project at the annual meeting of the Classical Association of the Middle West and South (Austin, TX) in April, and at the University of Alabama, Huntsville, in June. During the latter month, when in the United Kingdom briefly on other business, he also met one vicar (M. Roaf) and two compilers for discussions in Oxford. It goes almost without saying that he and the members of the APA sub-committee for the project have been in constant touch, as ever. His article "Mapping the classical world: major atlases and map series 1872-1990" was published in *Journal of Roman Archaeology* 5. 1992. pp. 5-34. It offers a detailed appraisal of past and current cartographic efforts in the field; a copy was sent to every participant in the project.

The director visited Donnelley Cartographic Services (Lancaster, PA) in connection with project work in July. One important development of which he learned then is the likelihood that the forthcoming 1:1,000,000 Digital Chart of the World (based on ONC) is now expected to permit computerization of the entire production of the 79 pages of Atlas maps at this scale when the second phase of the project is reached in 1994/5. Thus on publication these pages could then be made available on CD-ROM as well as in printed form. If such a development were to be sanctioned, production costs would be reduced, and the versatility and permanent value of the Atlas enormously enhanced. However, since release of DCW will not occur before this fall at the earliest, it is impossible to be more definite yet. Donnelley strongly urges that for the present the project continue to maintain its existing methods, materials and schedule.

Two thousand copies of a fund-raising brochure designed and produced within the figure budgeted by the APA have just been delivered. The first of them, together with covering letters, are about to be mailed to targeted potential donors. A project logo and letterhead are due for delivery shortly too. Meanwhile the Dean of the College of Arts and Sciences, UNC, has offered to double the College's grant towards supplies to \$2,000 per year from August 1, 1993, should the project gain renewal of NEH funding from that date. In

addition, the Samuel H. Kress Foundation has awarded \$15,000 per year for 5 years from July 1992, making \$75,000 in total. Thus within its first year of NEH support the project has been able to claim very nearly half the total currently offered in federal match.

Susan Jenny began work as arranged on February 24th, and has more than come up to expectation as Project Manager. Confronted initially with bare rooms, two old desks and three similar chairs, she has by now acquired additional furniture, as well as all supplies and equipment. A Gateway 2000 33MHZ, 386 computer system and Okidata 400 laser printer were purchased with APA funds as planned. The office is connected to BITNET. The project's extensive files, as well as its accounts, have been professionally organized. Large tables for map work, together with map storage cabinets of suitable type, are important further needs now being pursued. Arrangements have already been concluded with the University's Map Librarian for future use of some map storage space on the other side of campus as and when required.

Authorization to hire a Map Editor has been granted by UNC. This will be a half-time EPA/Non-Faculty position, matching that of Susan Jenny on the managerial side. Two such half-time positions are expected to meet the project's needs better than a single full time one with both editorial and managerial responsibilities.

August 1992–January 1993

The third half-year following the project's full launch on August 1, 1991, while by no means free of stress, has gone almost surprisingly well overall. So far as the office is concerned, a substantial part of the credit must go to Susan Jenny who, with eleven months now completed in the post, has proven a most effective project manager. An application for renewal of NEH funding for the three years beginning August 1, 1993 was submitted by the September 1, 1992 deadline. It incorporates a new locator outline [attached], together with confirmation that responsibility for the compilation of every map has been settled. Requisite payments of honoraria (first installments) and expenses to both compilers and vicars have been made. Physical bases for all maps at 1:500,000 scale, as well as "India" at 1:5,000,000, are in the hands of compilers – in other words for almost everything within the first of the project's two phases, extending through 1994. In mid-January 1993 Donnelley took delivery from the Defense Mapping Agency of the elements for five ONC sheets. These now enable physical bases for 27 pages of maps at 1:1,000,000 to be made up,

work which Donnelley aims to complete by around the end of March. Before then, the elements for at least two more ONC sheets are expected to arrive from the United Kingdom Directorate-General of Military Survey. Given all the difficulties which continue to surround such dealings with defense agencies, this is a fair rate of progress.

The Digital Chart of the World eventually reached Donnelley in October 1992. It turns out to be somewhat cruder even than expected, but one of Donnelley's Geosystems teams has started working with it, and has now invited the director to come to Lancaster, PA, for initial review of the practicalities of computerizing production of all 79 pages of Atlas maps at 1:1,000,000 scale with it. This meeting is arranged for February 1993. At the same time the director has begun to exchange findings with the Curator for Art and Archaeology, Perseus Project [an integrated, computerized reference program for classical civilization, phase 1.0 of which, relating to the Greek world, was issued by Yale U. P. in 1991. Phases 2.0 and 3.0 are now being developed], which is also experimenting with DCW. Naturally, no major change of this kind to the project's existing production plan would be implemented without prior approval by NEH. In any event computerization will hardly affect the work of compilation itself.

The three 'northern' vicars (J. Drinkwater, C. Wells, J. Wilkes) met in London, U.K., during November 1992, and Wells met with three of the compilers responsible for North Africa in Rome, Italy, during January 1993. A Workshop attended by about 20 vicars and compilers formed part of the program for the AIA/APA Joint Annual Meeting in New Orleans at the end of December: this was conducted by the director, with the generous assistance of the Atlas designer, Jeannine Schonta (R. R. Donnelley and Sons Co.). A number of issues and concerns affecting compilation were resolved or clarified, and a revised set of Instructions for Compilers was circulated in late January 1993. The hope is that this will prove the last such revision: it incorporates very few changes to existing policy, but does above all strive to explain the actual process of compilation (sect. 4) with even greater clarity than before. In accordance with the project plan, the director has arranged to visit the United Kingdom in March 1993 to conduct a similar workshop and to consult with vicars and compilers based in Europe. He has also requested the APA to retain an Atlas workshop/meeting as part of its Annual Meeting program, so that there will be a designated forum for all those engaged in compilation to share their concerns.

Profs. Foss and Mitchell, joint compilers of Map 62 "Attalea", are to be congratulated on duly submitting their completed draft a week ahead of the December 31, 1992 deadline. It was especially valuable to have the opportunity of displaying their materials to fellow compilers at the New Orleans

Workshop. Moreover insights gained from their experience could be incorporated in the revised Instructions. For security and other purposes, all their mylar originals have now been reproduced photographically by Donnelley. Indication of color has to be marked on the copies afterwards, but in other respects the quality of reproduction seems high; as a matter of principle, such copies will whenever possible be kept at a different location from the originals. Guidelines for reviewers have been developed, and Prof. XXX, one of the project's core-group of reviewers, has agreed to assess "Attalea".

The opportunity to steer this map through every stage of production offers excellent preparation for handling the further drafts due later this year. To provide the best working conditions in the project office, four large tables were ordered and due to arrive by the end of January 1993 (though in fact there has been some delay). A 'light table' and large map storage cabinet are also about to arrive on loan from the UNC Center for Urban and Regional Studies. No less important, the plan to hire a Map Editor (half-time) will now be implemented with a view to ensuring that he/she will be in post around mid-1993.

The director lectured about the project at the University of Michigan, Ann Arbor, in October 1992, at Princeton University in November, and at the University of Illinois, Champaign/Urbana, in January 1993. The American Council of Learned Societies has unanimously proposed the project to the Union Académique Internationale for its adoption and recognition, and the President of UAI has expressed the confident expectation that when its formal vote is taken in June 1993, this will likewise prove unanimous. At UNC, *Arts and Humanities News* vol. 6.1 pp. 4-5 featured the project; it also received special mention as a research initiative in the Chancellor's Annual Report for 1991-92. A full-page update on the project's progress, with locator outline, appeared in the *APA Newsletter* vol. 15.5 (October 1992).

The project's fund-raising brochure received a top 1992 award for design and printing from the Printing Industry of the Carolinas Inc., and has been extensively circulated. In this and other ways fund-raising has been active. There has been some gratifying success, and other promising initiatives are ongoing. One member of the business and development sub-committee (H. B. Evans) has regrettably had to withdraw because of other commitments, but he has been replaced by two new members (K. Galinsky, T. J. Luce). At UNC Chapel Hill, the director has had individual discussions with the Director of the Arts and Sciences Foundation and the Director of Corporate and Foundation Relations; a joint meeting with them is now arranged for February 1993.

The Luther I. Replogle Foundation has awarded the project a total of \$25,000

(\$5,000 per year for the five years 1993–97). The Magie Publications Fund (Princeton University) has awarded a total of \$20,000 (\$10,000 in 1993, \$5,000 in 1994 and again in 1995). The Program for Cultural Co-operation between Spain's Ministry of Culture and U.S. Universities has made a one-time award of \$5,000 in 1993. In addition, as part of the Association's 1992 Annual Giving Campaign, APA members have to date jointly contributed \$2,710. All this support suggests that by the April 1993 deadline the project should prove able to draw upon the full amount of federal match available to it (\$9,290 will remain to be claimed after the above donations have been matched).

February–July 1993

During this fourth half-year the Project has sustained its good progress. As is only to be expected, not everything has been perfect, but the difficulties are only of a temporary nature and should not affect the achievement of goals. Most gratifying of all has been NEH's vote of confidence in renewing its support with a substantially higher level of funding. Warmest thanks are due for this award. The comments of NEH evaluators and panelists were almost uniformly supportive, with the regrettable exception of one evaluator whose perverse demands are quite unrealistic! The disappointment of another evaluator, evidently echoed at the panel, that all measurements are in feet and miles rather than metric is well understood. At least, however, U.S. Defense Mapping Agency materials have the signal merit of being consistent throughout in this respect, and the herculean task of converting all of them to metric would be misplaced effort.

Elements for 12 out of the 18 ONC (1:1,000,000 scale) sheets required by the Project have now been received by Donnelley. Twenty-four of the map bases derived from these twelve sheets have been made up and shipped to compilers; the remaining six map bases derived from these sheets will go within the next month. This represents completion of an immense amount of difficult work which is vital to the Project's progress. Elements for the final six ONC sheets were due to be delivered from DMA (4) and its U.K. counterpart (2) some time ago now, but understandably they have been delayed by those agencies' recent preoccupation with developments in Somalia and the former Yugoslavia. Such delay is not yet cause for alarm on the part of the Project, in view of the fact that none of the maps derived from these six sheets has a compiler's submission deadline earlier than mid-1995. Agency staff remain sympathetic to the Project's needs.

A useful review of the practicalities of computerizing production of all the Atlas maps at 1:1,000,000 scale was held at Donnelley Geosystems on February 23rd. It was established that this important goal can be achieved with the use of the Digital Chart of the World (derived from the ONC series) as a seamless topographic base. Cultural information for the maps will be formatted for a database by the Project Office, and the maps will be produced digitally by Donnelley Geosystems. Principal desired functions of the database were agreed upon, and Donnelley's team undertook to develop a detailed plan for review at a meeting now arranged for September 3rd.

Dr. Mattingly (compiler for Libya and environs) reached the conclusion that coverage of the Fezzan ought to be extended, and it has been agreed therefore that he will compile a double spread on its side at 1:1,000,000 covering the area south of Map 35 (to be placed immediately following it). The new map "Garama" will be based on ONC sheet H3 (which is already required elsewhere), and submitted by December 31, 1995.

Sound progress has been made in establishing scales and bases for the three 'special' maps of the environs of Rome, Byzantium/Constantinople and Athens. These are to have a uniform scale of 1:150,000; ideally, too, they will all have bases enlarged from the relevant sheets of DMA's Joint Operations Graphics series 1501, although this latter point has yet to be confirmed.

Following an AA/EOE search, Mary Ellen Downs was appointed to the half-time position of Map Editor from June 28th (for one year in the first instance). She comes to the Project from the Archaeo-logical Institute of America, Boston, and is currently finishing up her University of Indiana dissertation on Romanization in southern Spain. She already has editorial experience, and has at once displayed it to excellent effect in preparing the two compilers' submissions for "Attalea" (Map 62) to go into production by Donnelley. These submissions received a highly favorable review from Prof. XXX. A proof of "Attalea" is to be ready in time for the meeting of compilers in Washington, DC, arranged for December 27th.

In addition to developing a computer program for preparation of the *Map-by-Map Directory*, Mary Downs is next turning to Dr. Fentress' compilation for "Cirta" (Map 31), which arrived in mid-June, two weeks ahead of its deadline. This is being reviewed by another of the Project's core-group of reviewers, Prof. XXX. It is almost a relief that the other submissions due at the end of June have not come yet. However, it is unequivocally established that all are close to completion and should be delivered during the fall. As a result, such minor delay at the beginning of the submission-cycle gives no special cause for concern.

For personal reasons unrelated to the Project, Dr. XXX has regrettably relinquished his participation in it, and returned all the materials and

payments that he had received. He has nonetheless offered to scrutinize the drafts (for parts of Maps 66 and 67) of his replacement, Prof. John P. Brown. Brown was formerly on the faculty of the American University in Beirut, and is the author of a monograph on the physical geography of ancient Lebanon and Phoenicia.

The workshop for vicars and compilers held in London, England, on March 11th was very well attended and proved sufficiently rewarding for those present to urge that it, too (like its counterpart in North America just after Christmas), become an annual fixture. Circulars incorporating items arising from that meeting and subsequent informal discussions were sent to all participants in the Project on March 26th and June 30th.

In Chapel Hill the Director was interviewed about the Department of History in general, and the Project in particular, for a new video about the University of North Carolina which is being produced for the Morehead Visitors' Center. Overseas he lectured about the Project at Queen's University, Belfast (U.K.) in March, and at three institutions in Israel during June (Tel Aviv and Bar Ilan Universities, and the Institute for Advanced Study, Hebrew University of Jerusalem). By invitation of the Consejo Superior de Investigaciones Cientificas, he also attended a conference at Toledo (Spain) in May to celebrate the revival of Spain's contribution to the *Tabula Imperii Romani*. Since Prof. Robert Knapp (vicar for the Iberian peninsula) could be present too, this was an excellent opportunity to cement good relations with the Spanish team, who proved as keen to assist the Project as Israeli colleagues were the following month.

At its meeting in Fez (Morocco) during June, the Union Académique Internationale honored the Project by unanimously adopting it. For August 1994, the Director has accepted an invitation to make a presentation about it at the quadrennial conference of the Fédération Internationale des Etudes Classiques to be held at Université Laval, Québec (Canada). He has also accepted an invitation, and supplied materials, for the Project to be featured extensively in a special exhibition entitled "The Power of Maps" due for display at the International Gallery, Smithsonian Institution, Washington, DC, from November 9, 1993, to January 23, 1994. This exhibition previously enjoyed great success at the Cooper-Hewitt Museum, New York; nothing from the Atlas was displayed then, although Jeannine Schonta of Donnelley Geosystems did discuss its design there on March 2nd in an associated lecture series. Since upwards of 100,000 visitors to the enlarged exhibition in Washington are expected, this will now offer the Project exposure to a wider audience than ever before, especially as segments of the specimen map "Byzantium" will even appear in the exhibition brochure and associated publicity. It is particularly fortunate, too, that the post-Christmas joint meeting of APA and

AIA will be in Washington this year.

At UNC Chapel Hill, the university's fundraisers have continued supportive; no tangible result has emerged from meetings with them, however, although it may yet. The Florence Gould Foundation made the Project an award of \$25,000 in March: part of this sum was put towards completing NEH's (first) match target of \$62,000 to be claimed by April 30th. The remainder has been retained for putting towards the second match target in August, along with the second annual award of \$15,000 from the Samuel H. Kress Foundation (paid in July), a gift of \$151 from the Craven Committee, Ireland Fund (University of Oxford, U.K.), and gifts from other individuals to make up an immediate total match claim of \$30,671. Other fundraising efforts are in progress, as ever – with some encouraging prospects, although to be specific at this stage would be premature.

August 1993–January 1994

Altogether the Project continues to move ahead very well, despite some frustrations. A significant part of the credit must go to the Project Manager, Susan Jenny, and to the staff of Donnelley Geosystems: the performance of both remains excellent. At Donnelley, Jeannine Schonta, while still very much abreast of the Project's progress, has been handing the leading role in day-to-day operations to Janet Kelly.

Acquisition of the last six sets of ONC elements required (1:1,000,000 scale) has continued to give a quite unwarranted amount of trouble. The two sets made by DMS in the United Kingdom were eventually supplied at the end of December, but the four made in the United States are still being withheld by DMA, which (sad to say) has become most uncooperative, due to staff changeover and perverse misinterpretation of copyright law. However, with the Digital Chart of the World now available (derived from the ONC series), Donnelly has been able to reproduce all but the shading elements by this alternative means, and so compilers will finally have everything that they need for all the Atlas maps at the two regular scales by the end of February. Acquisition of the shading elements is being pursued.

Meantime there has been more success with bases for the three special maps *Roma*, *Bosporus*, *Attica* (nos. 42, 51, 58). It can now be confirmed that these will all derive from DMA's Joint Operations Graphics 1:250,000 series enlarged to 1:150,000. Whilst elements for this restricted military series are unobtainable, the linework for the physical features can be traced (by an

expert, with difficulty) from printed sheets. This has been done for *Roma*, and the base shipped to its compilers. Creation of the other two bases in the same way is a current priority. *Attica* represents a special challenge, because it happens to extend over four JOG sheets.

Since taking up the position of Map Editor at the end of June (half-time), Mary Downs has excelled. She had first to check the compilation overlays of Attalea (Map 62) in preparation for production by Donnelley. Her next task was the major one of checking its substantial *Map-by-Map Directory* entry, and transferring it to disc, where it amounts to 16 pages of ancient and modern names, references, and bibliography. By definition this work (all overseen by the Director) has entailed establishing a suitable computer program (with Filemaker Pro), adding a Turkish font, and settling a host of editorial conventions that will remain standard.

A few subsequent compilers' submissions have required adjustments before being sent out for review. Consequently, an unanticipated burden of compilation work (as opposed to checking and editing) has been imposed upon Mary Downs. In recognition of this, and in the expectation that further cases may arise over the next few months while compilers are still familiarizing themselves with the complexities of the *Instructions*, she is being paid an honorarium of \$3,700 as compiler in six equal installments between January and June 1994. NEH was notified on October 27, 1993 that a change of this type was under consideration. There is no addition to the approved budget because the hiring of a half-time Secretary (allowed for from January 1, 1994) is being postponed; the need has not emerged yet. The current need is rather for a Research Assistant, and in the New Year quite unexpectedly the UNC Chapel Hill Department of History offered to provide one for the Spring Term (10 hours per week for 15 weeks). Gavin Sundwall, a doctoral student in the department's ancient field, is already proving a well-qualified, able and enthusiastic checker for the *Directory*.

A meeting at Donnelley Geosystems on September 3rd confirmed that it will be possible to computerize production of all 1:1,000,000 scale maps and issue them on CD-ROM with database (as well as in the printed volume), using Arcad and the DCW. Further preparatory work for this purpose is ongoing. The physical base for *Ctesiphon* (Map 89) has been created, incorporating the planned enhancement of the very limited ONC altitude tinting. Donnelley will begin production of *Ctesiphon*, as the first 1:1,000,000 scale map, during mid-1994.

In November all compilers and vicars were sent samples of the completed *Map-by-Map Directory* entry for *Attalea* to serve as an illustration and model. A proof of the map (looking magnificent), together with the complete materials relating to it, was ready for inspection at the meeting of compilers

and vicars in Washington on December 27th along with the physical base for *Ctesiphon*. Jeannine Schonta, Janet Kelly, Mary Downs and about 15 to 20 participants in the Project all attended this valuable occasion. An equivalent meeting is due to be held in London, England, on March 10, 1994. Meantime, four compilers have made individual visits to the Project Office in connection with their work.

The following compilations have been received and are currently at the stage indicated:

31 *Cirta* Reviewed by Prof. XXX (core reviewer), corrected, and checked; now in production

39 *Patavium* Prof. XXX has been approached for a review

40 *Pisae* (mainland) Under review by Prof. XXX

55 *Pergamum* S. Mitchell's part (only) has so far been received

60 *Halicarnassus* C. Foss' part (only) has been received, and is under review by Prof. XXX (core reviewer)

70 *Cyprus* Being prepared for review by Dr. XXX

72 *Nile Delta* Being prepared for review by Prof. XXX

73 *Memphis-Oxyrhynchus* Being prepared for review by Dr. XXX

76 *Porphyrites et Claudianus Montes* Ready for review by Dr. XXX

78 *Oasis Magna* Under review by Prof. XXX.

In addition, Prof. XXX (core reviewer) has accepted an invitation to review Map 89 *Ctesiphon*, due for submission in February. Other submissions notified by their compilers as very close to completion are: 14 *Arelate-Massilia*, 15 *Forum Iulii-Nicaea*, 41 *Arretium-Corfinium*, 42 *Roma*, 46 *Sicilia*, 53 *Epirus-Acarmania*, 59 *Creta* (J. Bennet's part), 60 *Halicarnassus* (G. Reger's part), 69 *Arabia Petraea*.

Several compilers have been granted postponements of one to four months. At this stage of the project such modest requests are no surprise, nor cause for special concern. It has been emphatically established either by the Director or by the vicar responsible, or both, that every map due in the first phase of Atlas production (in general, for 1994 submission) is being actively worked upon. Altogether the current rate at which submissions are being delivered is satisfactory, and it can fairly be expected to speed up as time goes on.

The editor of the *Transactions of the American Philological Association* has kindly agreed to incorporate a section from time to time in the annual issues of the periodical for contributions arising from, or related to, the Atlas. In particular, this will allow compilers to publish more extensive findings which the *Map-by-Map Directory* is not designed to accommodate.

Fundraising activity has been vigorous, not least thanks to plans formulated

at a meeting of the Development sub-committee in Princeton, NJ, on November 7th. An award of \$15,000 over the three years 1993–95 has been made by the Arete Foundation, and another of \$20,000 likewise over the three years 1994–96 by the Stanwood Cockey Lodge Foundation. In addition, the Gladys Kriebel Delmas Foundation has made an award of \$25,000 to sponsor Map 39 *Patavium*. The APA Members' Annual Giving Campaign for 1993 yielded donations totalling \$3,230 directed specifically to the Project. Ongoing discussions with further potential supporters show promise.

The Project received very welcome exposure in Washington, DC, through its large display table in "The Power of Maps" exhibit at the International Gallery of the Smithsonian which ran from November 9, 1993 to January 25, 1994; all the items from the table now revert to the Project for it to display elsewhere. During the fall the Director lectured about the Project at Loyola University, Chicago, Northwestern University, Evanston, the University of Washington, Seattle, and at UNC Chapel Hill.

February–July 1994

Thanks to excellent support of many kinds, together with an immense amount of hard work on the part of all concerned, the Project continues to progress remarkably well. Dr. Mary Downs' acceptance of the position of Map Editor for another year from July 1, 1994, now with full-time status, has been most welcome. So, too, has Gavin Sundwall's willingness to continue as Graduate Research Assistant during the summer. It is his experience which has prompted the hiring of another such assistant from July 1, 1994, although in Cambridge, MA, rather than Chapel Hill. While the resources of UNC's libraries here are first-rate, the bibliography for some maps inevitably includes dozens of exceptionally specialized monographs and journals which can only be obtained through Inter-Library Borrowing, with consequent delay, potential confusion, and charges of up to \$20 per item. Since the one location where most of the material is available seems to be Cambridge, MA, the logical expedient was to engage a Graduate Research Assistant there for more efficient and economical checking. This was done with the help of Prof C. P. Jones (core reviewer), who advertised the position, screened the applicants, and will continue to act as the Project's liaison on the spot as required. Derek B. Collins was chosen, and has begun work on the explicit understanding that the number of hours per week for which he may be called upon will vary, but can never exceed ten. Day-to-day communication with him is by e-mail (thus at no charge). There is no

addition to the approved Project budget because the hiring of a Secretary is being postponed for the foreseeable future.

Dr. XXX, compiler for Map 4 *India*, resigned on grounds of ill health, and has been replaced by Dr. G. Erdosy, Dept. of Near Eastern Studies, University of Toronto, Canada.

At long last it is possible to confirm that all physical bases are in the hands of compilers, with only three special cases still outstanding. The first, Map 27, arises from a request by the compiler (M. Euzennat) to change the scale from 1:1,000,000 to 1:500,000, which fortunately can be achieved with this 'fringe' map, but necessitates acquiring a set of TPC elements not otherwise required. DMA has given full clearance for DMS to supply them, although they have yet to arrive. The second is the large-scale (1:150,000) single-page Map 52 *Bosporus*, where the acquisition of printed JOG sheets (from which Janet Kelly will lift data manually to create the base) has set a fresh record for difficulty; but this challenge, too, has finally been surmounted, and the two sheets are now available for her to start work. The last base still to be made up is Map 1 *Mare Internum*, the pull-out spread at 1:5,000,000, where a decision remains to be taken on whether conventional or digitized base elements will be used; but work does not need to start on this overview for at least another year.

More than 20 vicars and compilers came from as far as Ljubljana for the meeting to discuss progress and problems in London, England, on March 10, 1994, making it a most valuable occasion. It has been decided to hold a meeting of the same type focused especially on problems concerning the northern fringe of the Roman world in Mainz, Germany, during November 1994.

During April the APA Secretary/Treasurer, Prof. W. J. Ziobro, and his Administrative Assistant, Diane Lipscomb, visited the Project Office. So, too, during the same month did a group of nine scholars meeting at the National Humanities Center for the International Workshop for Papyrology and Social History; six of them have some involvement in the Project. The Director made visits to Donnelley Geosystems, Lancaster, PA, on Project business in February and July. During the spring he lectured about the Project at Vanderbilt University, TN, and at the Universities of Durham and Oxford, England. A modified version of the Project's display for "The Power of Maps" exhibit is currently on view outside the Maps Collection in the L. R. Wilson Library at UNC Chapel Hill. Proposals for a presentation of the Project, and poster display, at the Joint Meeting of APA/AIA in Atlanta, GA, on December 27-30, 1994, were accepted.

Revised, updated versions of the following documents are being finalized for immediate circulation to all Project participants: Instructions for Compilers, Key, Locator Outline Map. Such fully updated information naturally forms part

of the application to NEH for renewal of funding to 1998, which is currently being prepared for September submission.

Map compilations have by definition been occupying most of the Project staff's time. A list of those so far received, and the current status of each, is appended below*. They already represent approximately one quarter of the total number of map pages, and include the first map to be produced on computer (no. 89).

Fundraising has shown some distinct success, and remains a priority as ever. The Horace W. Goldsmith Foundation made an award of \$60,000 over the three years 1994–96, and the Jerome Levy Foundation a single award of \$10,000. The Program for Cultural Cooperation between Spain's Ministry of Culture and United States Universities made a new award of \$3,000. In addition, two private donors contributed a total of \$1,500, and UNC Chapel Hill raised its institutional support by \$500 per year. Attention was drawn to the need for further funds by Prof. J. Russell (AIA), when he generously devoted his Presidential Letter in the current issue of *Archaeology* to the scope, importance and progress of the Project.

*15 *Col. Forum Iulii-Albingaunum* Reviewed by Prof. XXX; corrected and checked; now in production

29 *Iol Caesarea* Prof. XXX has been approached for a review

30 *Cirta* First proof has been delivered for correction

39 *Patavium* Reviewed by Prof. XXX; corrected and checked; now in production

40 *Pisae* Reviewed by Prof. XXX; being corrected and checked

41 *Arretium-Asculum* Under review by Prof. XXX

44 *Tarentum* and 45 *Bruttium* Dr. XXX has been approached for a review

49 *Macedonia* and 50 *Thracia* Being prepared for review by Prof. XXX

53 *Epirus-Acarnania* Reviewed by Prof. XXX; being corrected and checked

54 *Thessalia-Boeotia* Being prepared for review by Prof. XXX

55 *Pergamum* (Turkish territory only) Under review by Prof. XXX

58 *Attica* Under review by Prof. XXX

59 *Creta* (main map only) Reviewed by Prof. XXX; being corrected and checked

60 *Halicarnassus* (Turkish territory only) Reviewed by Prof. XXX (core reviewer); being corrected and checked

62 *Lycia-Pisidia* First proof corrected; second proof in preparation

67 *Damascus-Caesarea* (territory outside Israel) Reviewed by Prof. XXX; being corrected and checked

- 69 *Arabia Petraea* Under review by Prof. XXX (core reviewer)
70 *Cyprus* Reviewed by Dr. XXX; corrected and checked; now in production
72 *Nile Delta* Reviewed by Prof. XXX; being corrected and checked
73 *Memphis-Oxyrhynchus* Reviewed by Dr. XXX; being corrected and checked
76 *Porphyrites et Claudianus Montes* Reviewed by Dr. XXX; corrected and checked; now in production
78 *Oasis Magna* Reviewed by Prof. XXX; being corrected and checked
79 *Thebais* Reviewed by Prof. XXX; being corrected and checked
89 *Ctesiphon* Reviewed by Prof. XXX; corrected and checked; now in production.

August 1994–January 1995

The sound progress of the Project is being maintained. In Chapel Hill, Gavin Sundwall continues as Graduate Research Assistant for Fall Term 1994 and Spring Term 1995. Both he and Derek Collins (in Cambridge, MA) are performing very satisfactorily. The current lease of the Project's office space expired at the end of 1994. Another suite has been found in a modern office-building a few steps closer to campus, and the move here is expected to take place in late February. Although somewhat smaller (about 630 sq ft in place of 700) and less attractive than the present one, this suite does seem adequate for the Project's needs, and it is a relief to have secured it, given the extreme difficulty of finding office space to lease anywhere in the vicinity of campus. Campus Box, telephone, and fax numbers will all stay the same.

The physical landscape elements required for changing the scale of Map 27 *Mauretania Tingitana* from 1:1,000,000 to 1:500,000 have now been secured after the usual difficulties; this base has been made up and supplied to the compiler (M. Euzennat). Drawing of the base for the large-scale (1:150,000) Map 52 *Bosporus* should be finished in February. To accommodate minor layout shifts, new bases have been prepared for Maps 4 *India* and 29 *Iol Caesarea*. What should prove the final layout change to the Atlas has also been settled upon. This is to abandon the present Map 63 *Cappadocia* (1:1,000,000 scale), and to substitute in its upper half two adjacent 1:500,000 double spreads entitled *Ancyra* (compiled by S. Mitchell) and *Caesarea-Melitene* (compiled by XXX). A net addition of one map, and two map pages, would result, neatly bringing the total of maps in the Atlas to 95, and of map pages to 170. The

principal benefit, however, will be to eliminate the huge overlap of the present Map 63 with Maps 64 and 65: this is a unique and undesirable feature. In the revised layout for the region, all the overlaps will be small.

In August the Director visited Princeton University Press to report on the Project's progress; the plans and cost projections made by the Press in 1989/90 were reaffirmed, and special interest was shown in the digitized maps by its new (the first!) executive for electronic publishing. A meeting with Scholars Press in connection with preparation of the *Map-by-Map Directory* took place at the end of December, with Mary Downs (Map Editor) also attending. The major decision taken was that in its printed format the *Directory* would be a multi-volume work on 8.5 × 11 ins. paper, using camera-ready copy supplied by the Project. However, for CD-ROM only a single disc would be issued, and the Press will investigate the licensing of a suitable database server.

The Director met J. Camp (vicar) and Prof. XXX (reviewer for Map 58 *Attica*) in Athens at the end of September. The meeting of compilers in Mainz, Germany, on November 11th proved very rewarding. All three 'northern' vicars (Drinkwater, Wells, Wilkes) were present, and full advantage was taken of the opportunity to discuss problems of mapping the northern fringes of the Roman Empire and beyond. The meeting of compilers in Atlanta, GA, on December 27th was likewise useful, with both Mary Downs and Chris Gruber in attendance; the latter heads the Geosystems (Donnelley) team for computerized production, and he outlined this work with special reference to the first such map 89 *Ctesiphon*. Another meeting of compilers has been arranged for March 10th in the British Museum, London. In addition, the Director expects to confer with compilers based in France when he lectures in Paris at the beginning of February. A dossier of specimen map materials has been deposited at the British Museum for compilers to inspect and consult.

In August, the Director offered a presentation and exhibit about the Project at the 10th Congress of the International Federation of the Societies of Classical Studies (FIEC) at Université Laval, Quebec, Canada. On the same occasion the Project had the honor of being officially endorsed by FIEC. In October, the Director mounted an exhibit (with eight-page guide) in Chapel Hill for the Meeting of the Classical Association of the Middle West and South. He lectured on the Project at the Newberry Library, Chicago, in October, and at Yale University in November. In the latter month he also made a less formal presentation to faculty colleagues in Chapel Hill; he spoke likewise about the Project at the University of Georgia, Athens, in January. For the Atlanta Joint APA/AIA Meeting at the end of December another display was mounted, and an open workshop held to inform all interested members of both associations about the nature and progress of the Project. Mary Downs and Chris Gruber contributed to this workshop. It was the display, however, which exceeded all

expectations in the gratifying degree of attention and enthusiasm that it aroused. There is the definite intention, therefore, to offer another such (even larger) display at the San Diego APA/AIA Meeting at the end of 1995.

Production of maps and the stages leading to it (submission, review, adjustment, checking) have been proceeding smoothly enough. A summary is appended below.* Sixteen map pages were on display in Atlanta (approximately 10% of the total), and 45 others have been submitted. Thus over one-third of the Atlas is in hand, and the momentum of submission and production will be maintained throughout 1995. A few compilers have missed their deadlines, but they are now catching up for the most part: all are in touch with their vicar and the Director, and none is giving cause for alarm as yet. At the same time other compilers have delivered early – by as much as a year in one instance. Nearly all reviewers have reported within three months as requested, and altogether the devotion they have shown to giving submissions a thorough scrutiny has proved exceptional. Donnelley has changed its company name to “Geosystems Global” (dropping “Donnelley” altogether), but its structure and personnel remain unchanged, and they continue to give outstanding service.

An application for renewal of funding from August 1, 1995 was submitted to NEH at the beginning of September. At the same time the revised Instructions for Compilers, Key, Locator Outline Map, and Address List were circulated to all participants in the Project. The amounts requested over three years are \$300,000 outright and \$500,000 in 1:1 match. Also during September, NEH awarded a supplement (to the current grant) of \$14,700 in 1:1 match to meet unanticipated extra costs in upgrading the quality of the Digital Chart of the World for use as a computerized base. This brings the current match target to \$253,961. Thanks not least to the award of \$100,000 by the Andrew W. Mellon Foundation in October, this target will be claimed in full well before the April 30, 1995 deadline. The Mellon award has attracted local press and radio coverage. In addition, Scholars Press has pledged \$50,000 to the Project (payable in three annual installments between 1994 and 1996), and the Arete Foundation has increased its total commitment from \$15,000 to \$25,000. Despite this invaluable support, the Project still needs further substantial contributions towards the total of approximately \$1.5 million (beyond all the amounts mentioned above) which could guarantee its completion.

* [*“Being prepared for production” indicates that a reviewer’s report on the compilation has been received: careful account is taken of it by compiler, vicar, and Project Office. The length of this “preparation” stage is determined by many different factors, and so can vary considerably.*]

- 14 *Arelate-Massilia* Being prepared for production (reviewed by XXX)
- 15 *Col. Forum lulii-Albingaunum* 1st proof being corrected
- 29 *Iol Caesarea* In production (reviewed by XXX)
- 30 *Cirta* 2nd proof in preparation
- 39 *Patavium* 1st proof being corrected
- 40 *Pisae* 1st proof being corrected
- 41 *Arretium-Asculum* Being prepared for production
- 42 *Roma* Under review by XXX
- 44 *Tarentum* Under review by XXX
- 45 *Bruttium* Under review by XXX
- 49 *Macedonia* Being prepared for production
- 50 *Thracia* Being prepared for production
- 53 *Epirus-Acarnania* Being prepared for production
- 54 *Thessalia-Boeotia* Being prepared for production
- 55 *Pergamum* (Turkey) Being prepared for production; (Greece) Under review by XXX
- 57 *Peloponnesus* Being prepared for production
- 58 *Attica* Being prepared for production
- 59 (*Creta*) Ready for production; (rest) Under review by XXX
- 60 *Halicarnassus* (Turkey) Being prepared for production; (Greece) Under review by XXX
- 62 *Lycia-Pisidia* 2nd proof being corrected
- 65 *Antiochia* (Turkey) Draft submitted; (Syria) still awaited
- 66 *Syria* (North) still awaited; (South) Under review by XXX
- 67 *Damascus-Caesarea* (Israel) Under review by XXX; (Syria) Being prepared for production
- 68 *Hierosolyma-Petra* Under review by XXX
- 69 *Arabia Petraea* Being prepared for production
- 70 *Cyprus* 1st proof being corrected
- 72 *Delta* In production
- 73 *Memphis-Oxyrhynchus* Being prepared for production
- 76 *Porphyrates et Claudianus Montes* 1st proof being corrected
- 78 *Oasis Magna* In production
- 79 *Thebais* 1st proof being corrected
- 84 *Paphlagonia* Being prepared for production (reviewed by XXX)
- 88 *Media Atropatene* Under review by XXX
- 89 *Ctesiphon* 1st proof being corrected
- 94 *Bactria* Under review by XXX.

February–July 1995

The Project has pressed ahead at a brisk pace during this half-year, and thus remains on schedule. The move to an office suite in NationsBank Plaza took place, as anticipated, at the end of February, and caused no more than slight disruption. The new working space, despite being a little smaller, is proving satisfactory. Fortunately, a second light-table, on loan from the Geography Dept., can be accommodated. Susan Jenny continues as Project Manager, although at her own request her half-time position will become a 10-month (rather than 12-month) one from August 1, 1995, so that she may have more family time during the school summer vacation. Dr. Mary Downs has accepted a further one-year full-time contract as Map Editor from July 1, 1995. Of the two part-time Graduate Research Assistants, Derek Collins continues in Cambridge, MA, but Gavin Sundwall is about to leave Chapel Hill for a year; his place will be taken by Brian Z. Lund, a well-qualified doctoral student in the Classics Dept.

For the sake of speed and economy, it was agreed in May that Geosystems should proceed at once to prepare as a set all the digitized physical bases for the maps at 1:1,000,000 scale, rather than preparing each one individually when the relevant compilation is submitted for production. This work is due for completion by September. The total of 45 bases to be prepared includes the equivalent of three new map pages to link the existing Maps 88 and 90 (ending at the Caspian Sea) with coverage of Bactria in Map 94. From both cultural and cartographic viewpoints there is marked advantage in adding these new pages. The decision to do so was only taken once it was established that existing materials could be drawn upon exclusively (without the need for obtaining new bases or making mosaics), and that the two compilers would be scholars already participating in the Project and thus familiar with it (Drs. E. Keall, who has compiled Map 90, and St. J. Simpson of the British Museum, who has assisted with Maps 87 and 89). Keall has offered to submit his two pages by December 31, 1995 as part of Batch D, and Simpson his single page by June 30, 1996 as part of Batch E.

Work both at Geosystems and in the Project Office has proceeded satisfactorily. Progress to date is summarized below.* The computer team's experience in producing the first map at 1:1,000,000 scale (89 *Ctesiphon*) during the final quarter of 1994 indicated that the breakdown of data onto (many) separate overlays for scanning could be undertaken more effectively and economically in the Project Office than at Geosystems. In consequence a procedure for this work has been developed and successfully implemented for the next 1:1,000,000 scale maps, 84 *Paphlagonia* and 88 *Media Atropatene*.

Otherwise the Project's concern has been to bring as many maps as possible to first proof stage, and to have corrections made by compilers. Second proofs, however, are being purposely delayed until all adjacent and related maps are in first proof, since this is the best stage at which to ensure consistency of presentation across entire regions.

Certain compilers who had fallen behind are now catching up, as the summary below indicates. Although Dr. XXX is indeed among them, it still seemed better not to burden him further with the new 1:500,000 scale map *Caesarea-Melitene* [see August 1994–January 1995 Report], but to commission this from Dr. T. Mitford (England) instead. The Project was not well served by one reviewer who in February lost a set of compilation overlays by inadvertently leaving them in a Paris telephone box (the importance of always having originals copied by Geosystems is at least confirmed), nor by another who agreed to deliver two reports within the standard three months, but after much longer merely sent back the materials unopened. Some such episodes are only to be expected; it is a blessing that there have not been more of them.

The meeting of compilers at the British Museum, London, on March 10, 1995 proved a most productive occasion. A smaller meeting in Frankfurt, Germany, on May 3rd (not attended by the Director) successfully settled the final difficulties in the mapping of the northern fringes of the Roman Empire and beyond. The Director visited Geosystems for discussions in both April and May. More generally, he lectured about the Project during February at the Université de Paris, Sorbonne, France, and then at the Universities of Tromsø, Trondheim and Bergen, Norway, in the same month; during March at the Universities of Cambridge and Manchester, England, and then at the University of Kansas, Lawrence; during April, to the "Dean's Club" [of donors] at UNC Chapel Hill; during May, at the Parthenon, Nashville, TN; and during June to the 75th anniversary session of the Union Académique Internationale held in Prague, Czech Republic. The Director's travel to this session was assisted by a subvention of \$500 from the Lumiansky Fund of the American Council of Learned Societies. His application to mount a further display of work in progress at the San Diego Joint APA/AIA Meeting in late December has been accepted. A new locator outline map incorporating the various adjustments and additions to the Atlas layout since August 1994 will be prepared for this occasion.

The 1993–95 NEH match target of \$253,961 was claimed in full. The Project greatly appreciates the Endowment's renewed support of \$130,000 outright and \$500,000 in 1:1 match for the three years beginning August 1, 1995. In July a useful initial meeting was held with the University Development Office to enlist its more active collaboration in achieving the new match target; a second meeting has been set for August 16th. Meantime the Project has been awarded

\$20,000 over the five years 1995–99 from the Hetty Goldman Fund of AIA, an additional \$10,000 from the Florence Gould Foundation, \$10,500 from the Barrington Foundation, \$7,500 from the Earhart Foundation, and \$10,000 from the Malcolm Hewitt Wiener Foundation. The Director's attendance at the UAI session in Prague, mentioned above, provided an opportunity to pursue an offer in principle from the Royal Dutch Academy to award the Project 10,000 florins (= approx. US\$6,500) on condition that at least two more European academies furnish comparable support. The Leverhulme Trust (in England) has awarded a Fellowship for the academic year 1995/96 to Dr. D. Braund, so that he may complete the formidable task of mapping the Black Sea region, for which he is uniquely qualified.

* [Map numbers refer to the locator outline dated 8–94. "Being prepared for production" indicates that a reviewer's report on the compilation has been received: careful account is taken of it by compiler, vicar, and Project Office. The length of this "preparation" stage is determined by many different factors, and so can vary considerably.]

- 13 *Caesarodunum-Burdigala* (central, southern segments) Submitted
- 14 *Arelate-Massilia* In 1st proof
- 15 *Col. Forum Iulii-Albingaunum* In 1st proof
- 19 *Pannonia-Dalmatia* Submitted. XXX approached for review
- 24 *Hispania Tarraconensis* (northern segment) Submitted
- 27 *Mauretania Tingitana* Submitted. XXX (core reviewer) approached for review
- 28 *Mauretania Caesariensis* Under review by XXX
- 29 *Iol-Caesarea* In 1st proof
- 30 *Cirta* Ready for 2nd proof
- 31 *Carthago* Under review by XXX
- 32 *Theveste-Hadrumentum* Under review by XXX
- 38 *Mediolanum* Submission promised for September. XXX will review
- 39 *Patavium* Ready for 2nd proof
- 40 *Pisae* In 1st proof
- 41 *Arretium-Asculum* In 1st proof
- 42 *Roma* Review promised for August
- 43 *Latium-Campania* Submission promised for August
- 44 *Tarentum* Being prepared for production
- 45 *Bruttium* Being prepared for production
- 48 *Illyria* Under review by XXX
- 49 *Macedonia* In production
- 50 *Thracia* In production

- 52 *Bosporus* Under review by XXX
- 53 *Epirus-Acarmania* In production
- 54 *Thessalia-Boeotia* Proof promised for August
- 55 *Pergamum* Will be ready for production in September
- 57 *Peloponnesus* Will be ready for production in September
- 58 *Attica* Some redrawing of coastline still required; otherwise ready for production
- 59 (*Creta*) Ready for production; (rest) Under review by XXX
- 60 *Halicarnassus* (Turkey) Being prepared for production; (Greece) Under review by XXX
- 61 *Phrygia* Submission promised for August. XXX will review
- 62 *Lycia-Pamphylia* 2nd proof being corrected
- 64 *Taurus* Submission promised for August
- 65 *Antiochia* (Turkey) Submitted; (Syria) Submission promised for August
- 66 *Syria* (North) Submission promised for August; (South) Being prepared for production
- 67 *Damascus-Caesarea* Will be ready for production in September
- 68 *Pelusium-Ierusalem-Petra* Will be ready for production in August
- 69 *Arabia Petraea* In production
- 70 *Cyprus* In 1st proof
- 72 *Delta* In 1st proof
- 73 *Memphis-Oxyrhynchus* In production
- 74 *Sinus Heroopoliticus-Aelaniticus* Submission promised for August. XXX (core reviewer) will review
- 75 *Antinoe-Abydos* Submission promised for August. XXX will review
- 76 *Porphyrites et Claudianus Montes* 1st proof corrected
- 78 *Oasis Magna* In 1st proof
- 79 *Thebais* 1st proof corrected
- 80 *Nubia* Under review by XXX
- 81 *Meroe* Under review by XXX
- 84 *Paphlagonia* In production
- 86 *Caucasus* Being prepared for production (reviewed by XXX)
- 88 *Media Atropatene* In production
- 89 *Ctesiphon* In 1st proof
- 90 *Ecbatana* Under review by XXX
- 94 *Bactria* Being prepared for production.

August 1995–January 1996

The Project's brisk pace has been maintained throughout the half-year ending January 31, 1996. All Project staff have been working well. A World Wide Web 'home page' is in preparation. A revised Locator Outline was produced in October, and is attached. Altogether, of the 98 maps which the Atlas is to contain, over 60 have now been submitted (the figure must be somewhat imprecise because only segments of some maps shared by different compilers have yet arrived). Of this total, 22 maps are in proof and were most successfully displayed at the San Diego Joint APA/AIA Meeting on December 29th, drawing very positive, enthusiastic reactions. Nine maps are at Geosystems, most of them in production, the remainder awaiting it. Nineteen maps are either being adjusted by their compilers in the light of reviewers' reports, or are in the Project Office ready to be prepared for production; and 11 are either submitted, or under review. For further information, see below*. Many of the remaining maps are either about to be submitted, or are not even due until mid-1996 (the final deadline for all but a handful of special cases). Among those still to arrive are several that cover 'fringe' regions with little cultural data to be shown, which makes their production rather less time-consuming.

However, in order to ensure publication of the Atlas on schedule in Fall 1999, it is clear that the rate of map production must increase, and at a meeting in Lancaster, PA, on October 25th, Geosystems undertook to double this from the New Year. As a result, the production of approximately 24 maps can be expected during 1996.

A small number of maps at 1:500,000 scale are now sufficiently overdue as to create cause for concern. The Director and relevant vicar are in touch with each compiler, and there is no doubt that work of high quality – covering regions where there are often exceptional difficulties – will be forthcoming in every case. But the delay and uncertainty in these instances have inevitably added to the problems of keeping the Project on schedule.

When Prof. XXX's submissions for segments of Maps XX and XX at last arrived in September, they unfortunately proved far below the quality expected for the Atlas. After consultation with the vicar (Prof. YYY), Prof. XXX was paid his second honorarium installment and at the same time relieved of all further commitment to the Project. His contribution has been reassigned to Prof. ZZZ, who has kindly agreed to a submission deadline of December 31, 1996. The Director has met twice with him (October 13th and December 8th) to discuss the work of compilation.

Experience with reviewers has continued favorable: in general, their reports have arrived on time (sometimes even early), and have proved immensely helpful. The reports furnished by Prof. J. Desanges (Paris) may be singled out for special praise.

The Royal Netherlands Academy of Arts and Sciences has kept its promise to seek partners for support of the Project among other European academies. If at least two partners can be secured, the European Cultural Foundation may also offer support. So far, the Royal Danish Academy and the Swiss Academy of Humanities and Social Sciences have responded, along with the Groupe Romand des Etudes Grecques et Latines (for support of Map 17), awarding \$1,500, \$5,000, and \$2,000 respectively. Efforts are being made to urge others to follow this lead. At the same time a co-operative agreement has been reached with the Copenhagen Polis Centre, at whose August meeting the Director spoke on the invitation of the Centre's head, Prof. M. H. Hansen. The Atlas Project can contribute an essential cartographic dimension to the work of the Centre, while in return the Centre's 20–25 collaborators can offer an exceptionally full database on poleis of the archaic and classical periods.

Fundraising has been active, and successful beyond expectation. The Gladys Krieble Delmas Foundation made the Project a second award of \$25,000 for sponsorship of Map 19. In Princeton on October 13th, the Director met Prof. G. W. Bowersock, Mr. W. Lippincott (Director, Princeton University Press), and Ms. B. van Rheinberg (Press Editor) to discuss a variety of initiatives. On December 12th Mr. P. Pappas, Director of the Foundation for Hellenic Culture, New York, visited the Project Office on the invitation of the University of North Carolina, Chapel Hill, with possible support of the Project in view. Mr. S. (who wishes to remain anonymous, at least for the time being) met the Director and Geosystems personnel in Lancaster on November 16th, and on December 22nd signed a Charitable Pledge Agreement with APA and UNC for an award of \$500,000 payable in four equal installments between December 1995 and June 1997, together with an option (not a pledge, however) for a second award of the same amount payable between December 1997 and December 1999, subject to the Project staying on schedule and broadly within budget. His first installment (stock transferred with a value to the Project of \$128,548) was duly paid on December 22nd. Mr. S's magnificent pledge permits the Project to claim its current NEH match target of \$500,000 in full. In October, the amount still needed from non federal sources to ensure publication of the Atlas on schedule in late 1999 was estimated to be \$1.35 million. Mr. S's pledge reduces this amount to \$850,000, and in time possibly even to \$350,000. [Table 10.1] The Project's priority is therefore now to secure at least \$350,000 from other donors.

* [Map numbers refer to the locator outline dated 10–95. "Being prepared for production" indicates that a reviewer's report on the compilation has been

received: careful account is taken of it by compiler, vicar, and Project Office. The length of this “preparation” stage is determined by many factors, and so can vary considerably.]

- 4 *India* Being prepared for production (reviewed by XXX)
- 9 *Albis* Submitted; XXX approached for review
- 11 *Mogontiacum-Reginum-Lauriacum* Under review by XXX
- 12 *Vindobona-Aquincum* Under review by XXX
- 13 *Caesarodunum-Burdigala* (central, southern segments) Submitted
- 14 *Arelate-Massilia* In 1st proof
- 15 *Col. Forum Iulii-Albingaunum* In 1st proof
- 19 *Pannonia-Dalmatia* Being prepared for production (reviewed by XXX)
- 24 *Hispania Tarraconensis* (northern segment) Submitted
- 25 *Lusitania-Baetica* Under review by XXX (for modern Spain), and YYY (for Portugal); inset submitted
- 26 *Hispania Carthaginiensis* Under review by XXX
- 27 *Mauretania Tingitana* Almost ready for production (reviewed by XXX)
- 28 *Mauretania Caesariensis* In production
- 29 *Iol-Caesarea* In 1st proof
- 30 *Cirta* Ready for 2nd proof
- 31 *Carthago* Being prepared for production
- 32 *Theveste-Hadrumetum* Being prepared for production
- 33 *Numidia* Under review by XXX
- 39 *Patavium* Ready for 2nd proof
- 40 *Pisae* In 1st proof
- 41 *Arretium-Asculum* In 1st proof
- 42 *Latium Vetus* Being prepared for production
- 44 *Tarentum* Being prepared for production
- 45 *Bruttium* Being prepared for production
- 48 *Illyricum* Almost ready for production
- 49 *Macedonia* In 1st proof
- 50 *Thracia* In 1st proof
- 51 *Byzantium* In proof
- 52 *Bosphorus* In 1st proof
- 53 *Epirus-Acarnania* In 1st proof
- 54 *Thessalia-Boeotia* In 1st proof
- 55 *Pergamum* In production
- 57 *Peloponnesus* In production
- 58 *Attica* Almost ready for production
- 59 *Creta* In production
- 60 *Ephesus* In production

- 64 *Lycia-Pamphylia* In 2nd proof
- 65 *Taurus* Being prepared for production (reviewed by XXX)
- 66 *Antiochia* (Turkey) Being prepared for production (reviewed by XXX)
- 67 *Syria* (Southern segment) Being prepared for production
- 68 *Damascus-Caesarea* In production
- 69 *Pelusium-Ierusalem-Petra* In production
- 70 *Arabia Petraea* In production
- 71 *Cyprus* In 1st proof
- 73 *Delta* In 1st proof
- 74 *Memphis-Oxyrhynchus* In production
- 77 *Porphyrates et Claudianus Montes* 1st proof corrected
- 78 *Oasis Magna* 1st proof corrected
- 79 *Thebais* 1st proof corrected
- 80 *Nubia* Being prepared for production
- 81 *Meroe* Being prepared for production
- 85 *Paphlagonia* In 1st proof
- 86 (*Panticapaeum segment*) Under review by XXX
- 87 *Caucasus* Being prepared for production
- 89 *Media Atropatene* In 1st proof
- 90 *Ctesiphon* In 1st proof
- 91 *Ecbatana* Being prepared for production
- 94 *Tylos* Under review by XXX
- 97 *Bactra-Margiana* Being prepared for production
- 98 *Bactria* Being prepared for production.

Table 10.1 ATLAS OF THE GREEK AND ROMAN WORLD (Giving and Commitments) by
calendar years November 1995

February–July 1996

The half-year ending July 31, 1996 has proved a challenging period for the Project in several ways, but it has continued to move ahead as planned nonetheless. Its ‘home page’, skillfully designed by Erika Grams, is now accessible at www.unc.edu/depts/cl_atlas and has attracted much favorable attention. Local awareness was nicely boosted by a well written feature in the *Chapel Hill News* for July 19th. Earlier, in May, the (new) Chancellor of the University, commenting on his visit to the History department, singled out the Project for special praise as “providing a first rate instance both of the benefits of international scholarly collaboration and new and exciting applications of

information technology in the academy.”

The layout of the Project Office workspace has undergone a major reconfiguration in order to improve efficiency and convenience, and so far everyone is pleased with the result. The change was prompted in part by the generous donation from Geosystems of two light-tables, each much larger than either of those already in the office. The only condition imposed was that the Project be responsible for their removal from Lancaster, PA. Investigation indicated that the most practical and economical method really was to transport such heavy items (with glass a main component) by one-way U-Haul, which the Project Director did in late May. These tables will be of particular value whenever a pair of overlapping map compilations needs to be placed side-by-side.

Brian Lund has continued as graduate research assistant, currently working 20 hours per week for the summer period, and undertaking thereafter to accept another ten-hour appointment for Fall Term 1996. For a modest outlay it has also been possible to employ James Yavenditti part-time for the summer period. He is a most able undergraduate (rising senior, Classics major), who has begun the important task of checking that all toponyms/ethnonyms appearing in major reference works have duly been taken into account by the Atlas. He has started with the *Princeton Encyclopedia of Classical Sites*. Since he has a Work-Study assignment for the academic year 1996–97, and is keen to continue with the Project, there is now the prospect that it may at long last be able to employ a student under this scheme.

A major change in personnel has been called for by Dr. Mary Downs’ resignation from the position of Map Editor. Some promising opportunities arose in her special field of archaeology, and she faced the difficult choice of whether to take them, or to continue with the Project. Sad though it is to see her leave, it is heartening that she does so with such good prospects for the longer term. Certainly her contribution during the three years past has been an important, creative and lasting one.

Her position was advertised in April, and twelve applications were received; two were subsequently withdrawn. Three applicants were invited to visit the Project Office. In the first instance the position was offered to Dr. XXX, but his visit had convinced him that he would not succeed in making the move here to perform such a daunting range of tasks, and he therefore declined the offer. The position was then offered to, and accepted by, Dr. M. Joann McDaniel, who holds a doctorate in classical archaeology (1995) from the University of North Carolina, Chapel Hill, and was Fellow in Roman Studies at the American Numismatic Society, New York, during 1995–96. She has gained extensive archaeological fieldwork experience in Tunisia, Jordan and Egypt; in fact she has a prior commitment to return to the latter for six weeks in December 1996

and January 1997, which will be honored (as unpaid leave of absence). Dr. McDaniel began full-time on July 15th under a one-year contract, with the prospect of renewal. Dr. Downs ceased to be full-time on June 30th, but is continuing at 75%-time until early August. Consequently there is an overlap period of two to three weeks to ensure a smooth handover.

As promised, Geosystems now has two teams (rather than one) assigned to Project work – one for ‘conventional’ production at 1:150,000 and 1:500,000 scales, the other for computerized production from digital bases at 1:1,000,000 and (now commencing with Map 4 *India*) 1:5,000,000 scales. Altogether 11 maps have reached first proof during this half-year, with 5 others close to that point, and 6 more at various earlier stages in the process. Most production costs are remaining at or below estimate: only Map 80 *Nubia* overran notably, because of the quite exceptional extent of landscape change in the region of the Aswan High Dam. Recent acquisition of an outsize Hewlett Packard color printer now enables Geosystems to print Atlas 1:1,000,000 and 1:5,000,000 scale maps as single sheets by this means. The result is predictably not of the same quality as a matchprint, but it is more than adequate for proofreading, and there is a huge cost saving (each matchprint costs upwards of \$100). Consequently, matchprints are no longer normally being produced for maps at these two scales, although a set of ‘color keys’ will still be supplied along with several HP-prints.

Compilations have been arriving at a satisfactory rate: currently 10 are under review, and 16 others are either being adjusted in the light of the reviewer’s report, or are at the Project Office to be prepared for production. Some compilations due by the final regular deadline of June 30, 1996 have indeed missed it, but in most of these cases their completion is the compiler’s urgent priority, and they can confidently be expected to arrive within a couple of months, which is acceptable. In the very few cases where there is cause for concern, a careful watch is being kept by the Director and relevant vicar. The 5 compilations commissioned in special circumstances at an advanced stage are all expected by their deadline of December 31, 1996.

The quality of two compilers’ work has given trouble. Fortunately, in the case of Prof. XXX’s Maps XX and XX, Prof. YYY has agreed to become co-compiler. At the same time Prof. AAA has provided invaluable guidance for adjustment of Prof. BBB’s compilation for Map XX.

Despite extreme reluctance to add any map at this stage, there is good reason to extend coverage of northern Europe at 1:5,000,000 with a single-page map (on its side) that encompasses all of Ireland, reaches as far south as Riga, and links with the existing Map 1 to the south; in the layout it will occupy a righthand page following Map 1 (with righthand foldout). The map will be of special value for tracing contacts between the Roman world and southern

Scandinavia and the Baltic. It is being compiled by Dr. A. Bursche (Warsaw), with a submission deadline of December 31, 1996. His contribution to Map 12 *Vindobona* has confirmed that he can be relied upon to deliver excellent work on time. No new materials are required, since the base (GNC 4) is already in use for Map 1.

As it happens, the additional expenditure for this new map will be offset by a saving on the locator maps to stand at the head of each of the six Parts into which the Atlas is divided for purposes of presentation. It has now been decided not to proceed with such maps at all. Instead, Roman provincial boundaries at all three successive stages that the Atlas plans to represent (Hadrian, Verona List, Hierocles) can better be sketched on front- or end-papers.

The March annual meeting held at the British Museum, London, for compilers based in Europe was as usual a well-attended and rewarding occasion. Later in the same week the Director met several more compilers individually in Leicester and Nottingham, England (and lectured on the Project at the former university). In all likelihood, more such meetings with either individual compilers, or a small group responsible for a group of adjacent maps, will be called for from now onwards, in place of the larger gatherings appropriate to earlier stages of the Project's development. The Director has also lectured about the Project at Sweetbriar College, VA, University College, Dublin (Ireland), and the Universities of Bonn and Stuttgart (Germany). This last occasion led fortuitously to the establishment of contact with the editors of the 'new' Pauly (NP), a sequel (in 12 vols., the first due for publication this year) to the immense standard German encyclopedia of the classical world (1894–1980). Evidently NP has been at a loss to secure good maps of the classical world, and so would welcome some form of co-operation with the Project. For its part, the Project would find a list of NP's proposed lemmata invaluable.

So much activity in other areas has inevitably brought a relaxation of fundraising efforts during this half-year, although soon it must once again become a priority to raise no less than about \$300,000 from non-federal sources. However, the Royal Swedish Academy has made an award of \$6,000, and in May the Foundation for Hellenic Culture, New York, generously sponsored an exhibit and reception in most attractive surroundings on West 57th St. It remains to be seen how soon, if at all, there will be confirmation of its avowed intention to make an award to the Project. Meantime the multi-year commitments of the Arete, Goldsmith, Kress and Replogle Foundations have recently been completed. All have therefore been asked to consider renewing their support, which has been bringing the Project a total of \$50,000 annually.

Current status of each map

[Map numbers refer to the Locator Outline dated 10–95. “Being prepared for production” indicates that a reviewer’s report on the compilation has been received: careful account is taken of it by compiler, vicar, and Project Office. The length of this “preparation” stage can vary considerably.]

- 1 To be compiled by editor from data on larger-scale maps
- 1a New map (see report above), due December 1996
- 2 Mostly to be compiled by editor from data on larger-scale maps; data for Arabia has been supplied by D. Potts; Iran will be compiled by M. Roaf
- 3 Under review by XXX for Arabia, and YYY for Africa
- 4 In production
- 5 Reviewed by XXX. Being prepared for production
- 6 Submission expected soon
- 7, 8 Review by XXX promised for August
- 9, 10 (Kunow part) Reviewed by XXX. Being prepared for production
- 10 (Haselgrove part) Under review by XXX
- 11 Being prepared for production
- 12 In first proof
- 13 Under review by XXX
- 14, 15 In first proof
- 16, 17 Compilation proceeding, but gives some cause for concern
- 18 Submission reliably promised for August
- 19 In first proof
- 20 Under review by XXX
- 21 Reviewed by XXX. Being prepared for production
- 22 Submission reliably promised for September. XXX approached for review
- 23 Under review by XXX for Spain, and YYY for Portugal
- 24 French segment under review by XXX. Submission of Spanish segment imminent; YYY and ZZZ approached for reviews of Cataluña and central Spain respectively
- 25, 26 Being prepared for production
- 27 In production
- 28, 29, 30 In first proof
- 31, 32 Being prepared for production

33 In production
34, 35 Submission reliably promised for August
36, 37, 38 Submission reliably promised for September
39, 40, 41 In first proof
42 In production
43 Overlays submitted; Directory still to be completed
44, 45 Being revised, due December 1996
46 Submission reliably promised for September
47 Being prepared for production (reviewed by XXX)
48, 49, 50, 51, 52, 53, 54, 55 In first proof
56 Mostly to be compiled by editor from data on larger-scale maps, in consultation with G. Reger
57 In first proof
58, 59 In production
60 In first proof
61 Submission promised for August; cause for concern
62 Submission promised reliably for fall
63 Submission approved by vicar, subject to adjustments now being made
64 In second proof
65 In production
66 Turkish segment ready for production; Syrian due for submission December 1996
67 Lebanese segment ready for production; Syrian due for submission December 1996
68, 69 In production
70, 71 In first proof
72 Submission reliably promised for September
73, 74 In first proof
75 Under review by XXX (core reviewer)
76 Submission promised by fall; some cause for concern
77, 78, 79, 80, 81 In first proof
82 Submission reliably promised for August; XXX to review
83 Being prepared for production (reviewed by XXX)
84 Submission imminent
85 In first proof
86 Inset ready for production. Submission of main map reliably promised for September
87 Being prepared for production
88 Overlays submitted; Directory on verge of completion
89, 90 In first proof
91 Being prepared for production

92 (West) Submission reliably promised for September; (East) submitted.
XXX (core reviewer) approached for review
93 Under review by XXX
94 In first proof
95, 96, 97 (West) Submission reliably promised for August
97 (East), 98 Being prepared for production.

August 1996–January 1997

The half-year ending January 31, 1997 was another gruelling, yet productive, period for the Project. Its ‘home page’ has continued to receive many ‘visits’, and has been kept up-to-date by Erika Grams, most notably to reflect the revised Locator Outline issued in December. The Project was featured in the October issue of *The Tree*, the newsletter of the Academia Europaea. Regional awareness has been boosted by features in the *Chapel Hill Herald* and (Raleigh) *News and Observer*: the latter in fact made the Project front-page news with two photographs. The UNC Chapel Hill student newspaper followed soon afterwards with a remarkably supportive lead editorial.

An exhibit was mounted for the International Conference of Byzantine Studies, held in Chapel Hill during October. At the December Joint Meeting of the American Philological Association and Archaeological Institute of America in New York, all 23 maps which reached first-proof during 1996 were put on display, and attracted an exceptional amount of favorable attention – as well as some vocal disappointment that the maps were not available immediately! These maps included the second of the three at 1:150,000 scale (59 *Attica*) and the first at 1:5,000,000 scale (5 *India*). Viewing conditions were less than ideal, however, at this ‘poster session’ organized by AIA. Since the Project anticipates offering an even larger display at the Chicago meetings in December 1997, the intention is now to do this independently of the regular AIA session.

Dr. Joann McDaniel has more than lived up to expectation as Map Editor. Her effectiveness and skill confirm that it should indeed prove feasible to prepare over 40 compilations to go into production during the calendar year 1997. Understandably, Geosystems are calling for delivery of material at this rate in order to maintain the Project schedule. For the Map Editor there is a further challenge here, insofar as two teams at Geosystems must always be kept in work – one for computerized production (1:1,000,000 and 1:5,000,000 scales), the other for ‘conventional’ (1:500,000). The Director, Dr. McDaniel and

Mr. Strassler all visited Lancaster, PA, for discussions with Geosystems staff on November 8th. In addition, on December 9th, the Director visited Princeton University Press for preliminary discussions about production plans.

Brian Lund has maintained his outstanding performance as graduate research assistant with particular responsibility for checking Directory entries. He worked for 10 hours per week during the Fall Term, and for a total of 30 hours during the Christmas Vacation. From the beginning of the Spring Term he agreed to increase his weekly hours to 15, and almost at once had to tackle an alarming outbreak of computer virus in the Project system. Fortunately this now seems to have been eliminated, with no data lost. Two exceptionally able undergraduates, Rebecca Benefiel and James Yavenditti (both Seniors, Classics majors), have also been giving valuable assistance with checking proofs and other routine work – the former for all too modest a payment, the latter funded by the Work-Study scheme.

Progress to date on each of the 99 maps can be summarized as follows (numbers as on 12-96 locator outline):

In first proof (total 46): 5, 10, 13, 15-16, 20, 22, 24, 29, 30-31, 34, 40-42, 49-56, 58-61, 65, 69, 70-72, 74-75, 78-82, 84-86, 90-91, 95, 99.

In production (total 11): 6, 21, 23, 26-28, 36, 43, 46, 66, 83.

Being revised or prepared for production (total 20): 4, 8-9, 11-12, 14, 25, 32-33, 35, 45, 48, 62, 76, 89, 92-94, 96-97.

Under review (total 10): 2, 19, 37-39, 44, 64, 73, 77, 98.

Not yet submitted (and why):

- 1, 3 Both are almost entirely overviews of other maps at larger scales, and will be compiled in the Project Office. W. Vogelsang (Leiden) has been approached for assistance with S-E Iran on 3.
- 7 Promised reliably for February.
- 17, 18 Because of unacceptable rate of progress, some of the work is to be reassigned. Three possible replacement compilers are being approached.
- 47 Promised reliably for March.
- 57 Overview of other maps at larger scales. Selection of data to be marked will be completed by March; the compilation will then be prepared in the Project Office.
- 63 Promised reliably for February.
- 67, 68 Turkish and Lebanese segments reviewed; Syrian promised reliably for March.
- 87 Turkish segment reviewed; Georgian promised reliably for March.

88 Reports by two reviewers and the compiler of the Georgian segment of 87 (Braund) confirm that substantial revision of the original compilation is required. Since all efforts to secure a competent expert willing to undertake this have failed, Braund himself has offered to do so, although he cannot promise delivery before December.

The difficulties which have arisen with Map 88 are more severe than anticipated, but can now be considered under control in view of Braund's excellent record to date. This leaves Map XX as the one map where serious concern must persist for the time being. It is at least only a single map out of 99, and is receiving urgent attention.

Production of Map 28 was delayed until January because the physical base elements (TPC sheet G-1D) were only received at last by Geosystems on December 23rd. The request for them had been stalled endlessly by the Defense Mapping Agency. Once it was transformed into the National Imagery and Mapping Agency on October 1st, as an exclusively military agency now debarred from fulfilling any civilian requests, the elements might never have been obtained, were it not for the diplomatic skill of Luis Freile, who once again performed a miracle on the Project's behalf. Fortunately, this was the last set of elements required by the Project – materials which it is now impossible for others to obtain.

The Director lectured about the Project at a meeting of the N.C. Classical Association in September; at Koç (Istanbul) and Bilkent (Ankara) Universities, Turkey, in October; at University of California, Berkeley, and Loyola Marymount University, Los Angeles, in November; and at Mannheim University, Germany, and Penn State University in January. While in Germany, he also visited Prof. M. Roaf (vicar for Mesopotamia and beyond) for discussions, and met the editorial team for *Der Neue Pauly* to explore the (favorable) possibilities for co-operation and interchange between the two projects. At UNC Chapel Hill, the Dean has generously agreed to continue providing the Department of History with \$7,000 annually for two more years (1997–98, 1998–99) so that the Director may have a one-course release for Project work, and substitute teaching be provided.

Efforts to raise funds were especially active towards the end of this half-year, with several approaches being made to individuals: their success remains to be seen. On January 30th, in a meeting-room kindly provided by the Foundation for Hellenic Culture, Mr. Strassler arranged an informal presentation in New York by the Director and Prof. R. Bagnall (vicar for the Nile Valley) for a half-dozen potential supporters. On January 16th, Prof.

Bagnall was to have met representatives of the Arete and Goldsmith Foundations to seek their continuing support (previously \$30,000 per year in total), but due to a funeral this meeting has had to be postponed to March 6th. Meantime the Samuel H. Kress Foundation has awarded the Project \$25,000 payable in 1997, and the same in 1998 (previous support was \$15,000 per year). NEH made a generous allocation of \$225,000 to meet match claims by the Project during the financial year ending September 30, 1997; this amount has now been requested in full. NEH means to make the final \$91,000 of the Project's total \$500,000 match allocation available from October 1, 1997, and the Project should be in a position to claim this in full at that date.

February–July 1997

The half-year ending July 31, 1997 has proved harder work than ever, but it has also been extremely productive. To keep the project on schedule, it is essential that most maps reach first proof stage by Christmas 1997. It is now clear that they should, because during this half-year the project office has been able to meet its target of delivering to Geosystems (on average) one compilation per week ready for production. Sufficient compilations to ensure that 40 new first proofs are ready for display at the Chicago Joint Meeting of APA and AIA (December 27–30th) should be delivered by the end of September. As a result, by Christmas 85 maps out of the 99 total will be in first proof, and at least 4 more should be at the production stage. Only a further 10 at most would then remain to go into production during early 1998. APA and AIA have both approved the project's request for its own exhibit at the Chicago meeting.

In the project office special credit for such excellent progress must go to Dr. Joann McDaniel as Map Editor. She has been ably reinforced by the two graduating seniors, Rebecca Benefiel and James Yavenditti whose assistance to the project ended in April, and by the graduate assistant Brian Lund, who worked 15 hours per week during Spring Term and 20 during most of the summer. For the Fall Term, he will work 10 hours per week. In part to cover his absence on vacation during late July/early August, Thomas Elliott (graduate student in History) is working 10 hours per week for 6 weeks.

At Harvard, Derek Collins' place has been taken since May by Sviatoslav Dmitriev (graduate student in History), working for up to 10 hours per week; he has been especially helpful in checking material relating to Eastern Europe and the Black Sea region. In addition, Princeton University's Program in the Ancient World (PAW) generously funded one of its graduate students, Alfred

Bertrand, to give the project 20 hours per week of assistance for 10 weeks during May to July. In view of the success of this arrangement, the project has since undertaken to pay him for 10 hours per week during August, and PAW will do likewise for at least a further eight weeks thereafter (through early/mid-November).

Thanks to all this valuable assistance, the necessary checking of names and references has kept pace with the preparation of compilations for production. Progress has also been made towards the next important stage of presenting each Directory and bibliography in the prescribed format, checking both, and matching the names listed to those on the corresponding map proof. As a result, from fall 1997, all this material will start to be dispatched to compilers and vicars for proofreading vicariate by vicariate. Vicars will thereby gain an overview of their regions, enabling them to regulate overlap and ensure regional consistency of presentation.

The two teams at Geosystems have been maintaining map production with their customary efficiency and skill. Keith Winters (account representative) and Janet Kelly (production supervisor) visited the project office on May 20th. A major individual donor to the project joined them. The visit included a demonstration of the electronic transmission of computerized maps for the Atlas at 1:1,000,000 and 1:5,000,000 scales, and the manipulation of their digital data using the standard program Adobe Acrobat. More recently, Geosystems has proposed a dramatic enhancement of the otherwise minimal rendering of physical landscape on the maps at 1:5,000,000 by adapting Landsat imagery. Their experimentation continues, but an exciting, economical solution to this awkward problem is now in prospect at last.

Progress to date on each of the 99 maps can be summarized as follows (numbers as on 12-96 locator outline):

In first proof (total 64): 5, 9, 10, 13, 15-16, 20-24, 26-31, 34-38, 40-42, 45-46, 49-56, 58-61, 63-66, 69-76, 78-86, 90-91, 95, 99.

In production (total 13, all due for completion by Christmas): 4, 6, 8, 11-12, 25, 33, 43, 48, 77, 89, 93, 98.

Being revised or prepared for production (total 13): 2, 14, 19*, 32, 39, 44, 57*, 62*, 87*, 92*, 94*, 96*, 97*. Asterisked maps should be in first proof by Christmas. At least three of the remainder should be in production by the same date.

Under review: 7, 67 (Syrian segment).

Not yet submitted (and why):

1, 3 Both are almost entirely overviews of other maps at larger scales, and will be compiled in the Project Office (3 in all

likelihood during 1997, 1 early in 1998). W. Vogelsang has promised to submit data on S-E Iran for 3 by the end of September.

17 E. Bertrand (Lyon, France) has promised to submit by November.

18 G. Woolf has promised to submit by late summer.

47 Now promised for August.

68 (Syrian segment) Now promised for August.

88 Revision by D. Braund promised for December.

Only Maps XX and XX remain cause for anxiety: progress on both is being monitored with care.

The Director lectured about various aspects of the project at Princeton University in April, at the Classical Association of Canada Annual Meeting (St. John's, Newfoundland) in June, and at two summer programs sponsored by NEH during July (Institute, Boston University; Seminar, University of Texas at Austin). A general discussion paper by him "Maps for the classical world: where do we go from here?" [sc. after completion of the current project] appeared in *American Journal of Philology* 118. 1997. pp. 323–27. The project's 'home page' was selected as a Recommended Site by the History Channel.

The project is sad to lose two colleagues who have unfailingly helped it from the start and become its good friends. In Chapel Hill, Dr. Donald M. Wood, the project's Contract Specialist, died in early June. In Worcester, MA, Prof. William J. Ziobro relinquished the position of APA Secretary/Treasurer at the end of June. Dr. Wood is now replaced by Evie McKee, and Prof. Ziobro by Prof. John Marincola (in New York).

The project has been glad to receive – sooner than anticipated – payment of its final NEH match claim (\$91,150), thereby achieving the full \$500,000 currently offered. In order to ensure that the project maintains a stable base, adequately staffed through to its completion in mid-1999, an application has been submitted to NEH for one final year of support from August 1, 1998. No more than basic operating costs are sought for this 'capstone' award, all in matching funds.

The James H. Ottaway Trust awarded the project \$10,000, and Harvard Historical Series \$3,000. Support from the UNC Arts and Sciences Foundation has been extended through 1999 at the current level of \$2,500 per year. Having previously contributed a total of \$25,000 over three years, the Arete Foundation has now made a single further award for this amount payable in 1997. The Horace W. Goldsmith Foundation has likewise now awarded over the two years 1997–98 the same total of \$60,000 that it had previously contributed over three years. The anonymous donor who duly completed his

pledge to contribute \$500,000 by June 30, 1997 has recently offered further installments of the same total value, but only once the project has found all or most of the remaining non-federal funds required for its completion. Naturally, in response to this generous offer, efforts to secure the necessary amount (estimated to be in the region of \$350,000) have been intensified.

August 1997–January 1998

Fortunately, in this most stressful half-year the Project has been able to continue progressing on schedule. Thanks not least to tireless efforts by the Map Editor, Dr. Joann McDaniel, sufficient compilations were duly delivered to Geosystems by early October to ensure that 40 new first proofs could be displayed, as planned, at the Chicago meeting of the American Philological Association and the Archaeo-logical Institute of America on December 28th. Geosystems staff likewise made immense efforts to ensure the fulfillment of this important goal. This year there was ample space for the display, which attracted much attention and praise.

The current position is that 85 maps out of the 99 total are now in first proof, and six more are in production at Geosystems [1, 2, 19, 39, 44, 88]. Compilations for seven others are either under review [17, 47, Syrian parts of 67–68], or being prepared for production [3, 7, 14]. Only one compilation [XX] has still not been delivered – a source of considerable frustration, though happily it is clear that the compiler is close to the completion of a painstaking job. This lateness is deplorable, but can be accommodated. Meantime fifteen first-proof maps and their accompanying Directories have been prepared and sent out for correction [8–9, 28–31, 34, 58–59, Bennet's part of 60, 92–94, 96–97].

The immediate priorities are to finish off bringing all maps to first-proof stage, and to continue preparing proofs for correction (grouped, where possible, by vicariate). A major part of the latter process is to ensure that the accompanying Directory is in order – fully checked, correctly presented, and accurately matching the map itself. In order for this challenging work to keep pace, our experienced graduate assistant, Brian Lund, has agreed to devote more time to the Project during the current Spring Term. Sviatoslav Dmitriev and Alfred Bertrand continue as assistants at Harvard and Princeton respectively, and there is now the prospect of engaging a promising assistant in Chapel Hill for the summer.

On October 28–29th the Director visited Geosystems in their new premises

outside Lancaster to make a presentation about the non-cartographic aspects of the Project, and to discuss matters arising since the last such meeting (in May). These included the relief style for the six overview maps at 1:5,000,000, where it was decided to adopt a digital elevation model derived from the Digital Chart of the World in preference to using World Satellite data. The proofs displayed in Chicago duly demonstrated this visually striking style, which corresponds to that used for the other three scales in the Atlas. Specifications were developed, too, for the Front and End Papers, and for the outline maps showing Roman provincial boundaries at three successive stages. Geosystems demonstrated the stronger coloring and sharper definition that it is now able to achieve with the latest model of Hewlett-Packard outsize printer. In the course of the visit the Director also lectured about the Project at Franklin and Marshall College, Lancaster. In October he lectured likewise to the Duke Institute of Learning in Retirement (in a Science and Technology series, to an audience of over 150!), and in December at the Center for Hellenic Studies, Washington, DC.

Also in December, the Director accompanied three senior officers of Princeton University Press (Director, Controller, Production Manager) on a visit to Geosystems to discuss production of the Atlas volume and related matters. He was glad to learn that the Press is considering co publication with another major press (in order to boost worldwide distribution), and that it has requested Geosystems to take charge of all the arrangements for printing and binding.

The Project's finances have become more secure. The International Federation of the Societies of Classical Studies (FIEC), the Hellenic Society (U.K.) and the Joukowsky Family Foundation have made awards of \$2,000, \$500, and \$25,000 respectively. The Luther I. Replogle Foundation has extended its support of \$5,000 per year through 1998. The anonymous donor (Mr. S.) has pledged a further \$500,000 payable in four installments between December 1997 and June 1999. On completion of the pledge, the Atlas will be named the *Barrington Atlas of the Greek and Roman World*, and an acknowledgement approved by the American Philological Association and Princeton University Press will recognize the contribution made by himself and the Barrington Foundation. He has yet to give permission for his name to be disclosed. Princeton University Press has offered a line of credit up to \$350,000. While this is non-repayable, use of it may raise the retail price of the Atlas proportionately from the target figure of \$200 (with no such support) to an agreed maximum of \$300 (if the full line were to be drawn upon and nothing repaid). To date, \$220,426 has been drawn. Most recently, the Niarchos Foundation has given notice that it is about to make an award of \$300,000. With this and all the other support pledged or anticipated (and no major cost

overruns), the Project should be able to proceed to completion without calling on Princeton's credit further, although it is premature to predict that outcome with any confidence. It may even prove possible to reduce the current total drawn: its reduction, and if possible elimination, is now a major fundraising concern.

The Director has gained a University of North Carolina Instructional Technology Award of \$29,625 to develop by June 1998 a web-based, multimedia system to enhance undergraduate survey courses involving the classical world. Atlas Maps 1, 2 and 3 furnish the base materials. They are being made clickable and interactive, and then linked to a customized and extensible set of images, site plans, descriptions and web sites directly related to the instructional goals of relevant courses at UNC Chapel Hill. The resulting system will be accessible by way of the Internet. The work reinforces development of the Atlas Project, rather than delaying it in any way. It is being carried out by a small, fully qualified student team not otherwise currently engaged on the Atlas Project. The team leader (Thomas Elliott), however, has previously served as an assistant to the Project, and so is well acquainted with it. The team works from an office in the Classics Dept., not from the Project Office.

February–July 1998

Good progress has been sustained during this very active half-year. First proofs of ten maps were delivered by Geosystems [1, 2, 7, 14, 19, 39, 44, 67, 68, 88], and two more are about to arrive [3, 17]. The latest technology has made possible the successful production of Maps 17 and 68 (both 1:500,000 scale) on computer, rather than conventionally. By early August, 97 maps out of the 99 total will be in first proof. Of the remaining compilations, one is in production [47], and the last [18] should proceed to Geosystems by the end of August after adjustments called for by its (favorable) review have finally been completed.

During February, work at Geosystems was slowed temporarily by the need for team leader Janet Kelly to take indefinite sick leave, a sad blow and matter of grave concern to us all. David Stong was appointed to take her place, and quickly adapted to his new role. The Director had the opportunity to meet him for the first time on a visit to Geosystems in May.

Increasingly, by definition, the principal preoccupation of the Project Office has been to provide first-proof maps and their accompanying Directories to compilers for correction. The sets of such material dispatched now total over

70; more than 20 of these have already been corrected and returned. The current target is to complete the dispatch of almost all these materials by early October, and to press compilers for their return as soon as practicable. Predictably enough, there is considerable variation in the promptness of their responses, and in the degree of adjustment required. This excellent pace of work in the Project Office reflects the dedication and efficiency of Dr. Joann McDaniel as Map Editor and of Brian Lund as assistant responsible for Directories. Sviatoslav Dmitriev and Alfred Bertrand (at Harvard and Princeton Universities respectively) have likewise continued their painstaking work as research assistants, and they were reinforced in Chapel Hill for an eleven-week summer stint by a well-qualified graduate student, John Hansen.

Planning for the production and publication of the Atlas has advanced. The Director met the senior officers of the Princeton University Press for this purpose in Princeton during July, and a further meeting at Geosystems has been set for early September. Understandably, the Press is now re-thinking its earlier request (December 1997) that Geosystems take full charge of printing and binding. The brokerage fee added by Geosystems for this service would be substantial, and the quote for the work from Winton Swan, Detroit, recommended by Geosystems is approximately double that of Eurografica (Vicenza, Italy) favored by the Press.

The Project Office and Geosystems expect to complete their work on all the maps in time for final film to be ready for a printer by late summer 1999. If Winton Swan were chosen, this company would undertake to deliver bound copies for the American Philological Association annual meeting at the end of that year. Even so, the Atlas would still carry the date 2000 (not 1999), and the need for it to pass through the normal distribution channels would also put its official publication well into 2000.

Were APA to attach paramount importance to the availability of bound copies by the end of 1999, the Press would be willing to employ Winton Swan for printing and binding, with the difference between its quote and that of Eurografica being met by APA. This, of course, will amount to tens of thousands of dollars, and would seem a prodigal use of resources, even assuming that they could readily be tapped by APA. Meanwhile the many other risks and disadvantages imposed by such a tight timetable would persist.

Although Easter 2000 remains an option, the Press recommends planning publication for around Labor Day 2000. The Project Office and Geosystems would still adhere to their current target (all final film by late summer 1999), and to that important extent the Project would duly fulfil its longstanding goal of completion by this year. However, a longer, less stressful period would then follow for printing, binding and distribution, and publication in September 2000 would give greatest potential for sales in the pre-Christmas period. The

Press expects to give the Atlas a prominent position in its Fall 2000 trade catalog (issued several months earlier), with one of the maps on the front cover in all likelihood. There would be a pre-publication offer (at, say, \$50 off the list price) aimed especially at the academic market. It should be possible to display the entire set of finished maps in advance at the APA's December 1999 meeting.

At this moment, however, the choice of printer has yet to be made. Both Winton Swan and Eurografica have undertaken to provide sample press matches of Map 32 *Carthago* (one of the most complex doublespreads), and these will be compared in September when a representative from Eurografica attends the meeting at Geosystems mentioned above. The Press is committed to ensuring that the Atlas be produced to the highest standards in every respect.

This fall it will approach likely co-publishers such as Macmillan and Oxford University Press. A total print-run of 5,000 is currently envisaged, with 3,000 copies taken by Princeton for sale in North America and 2,000 by a co-publisher elsewhere. From the Project's perspective, this latter figure for the rest of the world seems unduly cautious. In addition, the interest that book clubs both in North America and Europe will show remains to be gauged.

A list price in the higher \$200s currently anticipated by the Press also gives some cause for concern, even when this price must of course accommodate repayment of the \$220,426 drawn to date on the Project's line of credit with the Press. Once again, fortunately, it is much too early for any decision to be taken. The Press has promised to furnish a breakdown of its anticipated figure, and the Project will remain alert to identifying means of reducing it.

At the least, the Project will now be more firmly resolved than ever not to draw further on its line of credit with the Press. Ideally, the means to repay some or all of it in advance should be sought, but priority may still have to be given to securing modest additional support to cover completion of the Project. Much depends on what the cost of making corrections in proof proves to be. So far, the expectation that most maps will require only light correction has been borne out. In all but a few cases, the second proof will be the final one.

The Niarchos Foundation's anticipated gift of \$300,000 was duly made in March, and the Director met members of its board in New York. This foundation requests that its name not be disclosed until further notice. NEH is to be thanked for meeting in full the Project's application for \$100,000 in 1:1 matching funds to cover office and personnel costs for the year beginning August 1, 1998. The Classical Association (U.K.) has given \$800 for Project support.

August 1998–January 1999

Good progress continues. All 99 maps are now in first proof, and the 14 of them delivered since the 1997 APA/AIA Joint Meeting were displayed at the Washington DC meeting at the end of December [1–3, 7, 14, 17–19, 39, 44, 47, 67–68, 88]. Despite the 1:500,000 scale, Geosystems was able to produce Maps 17, 47 and 68 on computer rather than conventionally. Geosystems has also designed on computer and delivered a doublespread 1:12,500,000 overview outline map to form the front- and endpapers for the Atlas (with, and without, modern national boundaries shown). It has likewise designed and delivered a doublespread 1:10,000,000 overview outline map to show Roman province names and boundaries at three successive stages – on the death of Trajan, according to the Verona List (doublespread in each case), and according to Hierocles, *Synekdemos* (single page). Vicars have undertaken to mark names and boundaries (insofar as these can be identified) in their ‘own’ regions, generously assisted by S. Esmonde-Cleary for Britain and S. Mitchell for Asia Minor.

As planned, the Project Office’s first concern during this half-year was to complete the preparation of first-proof maps and their accompanying Directories, and dispatch them to compilers for correction. This was achieved for all maps by Christmas, and much earlier than that for the great majority. It called for an exceptional amount of challenging work – not least to ensure that all overlaps and continuations are made consistent – on the part of Joann McDaniel as Map Editor and of Brian Lund as assistant responsible for Directories. They have been ably reinforced in the office by John Hansen, who continues as research assistant part-time, and Alex Weil, an undergraduate assistant under the Work-Study Program for 1998–99, who has proven an alert checker.

From September, the Project Office also needed to prepare corrected first proofs from which Geosystems could begin second proof production. For a time, it seemed that progress with this stage would be impeded by the impossibility of tackling most maps until corrected first proofs of all adjacent maps had been returned too – a problem created by some compilers’ slowness in returning their corrections. Fortunately, however, any such crisis at this stage was averted. Approximately 80 corrected first proofs have now come back from compilers. Twenty of the 80 were already prepared for production, dispatched to Geosystems, and delivered as second proofs before Christmas. They included maps at all four scales [4, 8–9, 29–38, 59, 70–71, 73, 76, 83, 95]. To date, another 15 have been prepared and dispatched by the Project Office, bringing the number to just over one third of the total.

The extent of correction required varies, but so far in predictable ways. Thus the most complex maps, as well as those produced earliest, typically require considerable correction; the less complex maps, and the more recently produced, require little. In every instance the Directory is liable to require extensive amendment, but not in ways that affect the map. The expectation is that, in all but a few instances, a map's second proof will quickly be cleared to become 'final copy', with minimal further adjustment required. To reduce costs at second-proof stage, only Hewlett-Packard prints are being produced for maps made on computer; for conventionally produced maps, existing elements will be reused where possible.

There is cause for reasonable confidence, therefore, that the remaining 65 or so maps can be prepared for second proof production during the next six months of 1999, before the current NEH grant expires on July 31st and the Project's regular staff must be laid off (S. Jenny, B. Lund, J. McDaniel). Production of second proofs and 'final copy' may well continue at Geosystems after that date, and the Director is likely to need some part-time assistance for a limited period in order to finalize the Directory. For this purpose it is likely that he will seek a two- or three -month 'no further funds extension' of the current award.

A valuable meeting took place at Geosystems in September, where the Director of Princeton University Press and his colleagues introduced the representative of the printer Eurografica (Vicenza, Italy). She gave satisfactory assurances about printing issues, and displayed a handsome dummy copy of the volume bound so that each doublespread lies flat upon opening. The front matter and gazetteer for the Atlas need to be at the Press by November 1999. Final film or discs must be at Eurografica by the end of January 2000. Stock can be expected to reach the Press warehouses in England and New Jersey by June 2000, with publication to follow around Labor Day. The understanding is, however, that prepaid copies would be dispatched to purchasers as soon as stock is available. The Press will finalize and announce the terms of its prepublication purchase offer by mid-1999, in time for the International History of Cartography Congress in July and the International Classical Congress in August. The Press has expressed interest in also undertaking publication of the Map-by-Map Directory, and this possibility (with its obvious efficiencies for promotion and distribution of the work) is being investigated.

UNESCO's International Council for Philosophy and Humanistic Studies (CIPSH) has awarded the Project \$2,000, and a foundation in N. Carolina which wishes to remain anonymous has awarded \$1,000. The Luther I. Replogle and Samuel H. Kress Foundations have renewed their support with commitments to contribute \$5,000 and \$25,000 respectively in 1999. The \$100,000 in match offered by NEH has been claimed in full.

In August, proofs of maps were displayed at the 22nd International Congress of Papyrologists (Florence, Italy), and at the Nubian Studies Conference (Boston, MA). In addition the Director has made presentations about the project at the University of Wisconsin, Madison, and Georgia Southern University, Statesboro, as well as twice at UNC Chapel Hill (to alumni and to the Classics Dept.).

Also in Chapel Hill, with support provided by a Chancellor's Instructional Technology Award, Thomas Elliott's team has successfully drawn upon materials from Maps 1-3 to create the *Interactive Ancient Mediterranean* for use in coursework by instructors and students (<http://iam.classics.unc.edu>). Demonstrations of this remarkable on-line initiative were made at recent meetings of CAMWS (Waco, TX), the NC Classical Association, the Foreign Language Association of NC, and at the APA/ AIA Joint Meeting.

February-July 1999

With 35 maps already sent for second-proof production by the end of January, the principal goal of this half-year was to ensure that corrected first-proof materials for the remaining 64 and their accompanying Directories be returned by compilers and prepared for second-proof production by the end of July. Despite innumerable difficulties this ambitious goal has been achieved, thanks once again to exceptional efforts on the part of the Project Office staff, in particular Dr. Joann McDaniel (Map Editor). Her heroic work for the Project is now at an end, as is that of Susan Jenny. Susan has been Project Manager since the establishment of the office in February 1992, and it would be hard to overstate what an immense benefit her dedication and efficiency have been throughout.

An extension of NEH's 1998/99 award (no new funds) to January 31, 2000 is much appreciated. Brian Lund will remain to coordinate the correction of second-proof maps, and to prepare the gazetteer and Directory for publication. He has already checked 50 second-proof maps produced by MapQuest. com [the new company name for Geosystems], and only in a single instance has he identified the need for any notable adjustment. Compilers are to be offered one final opportunity to check their work, with the strict understanding that on the maps only manifest errors will now be corrected, and that all adjustments must be reported by a firm deadline during the fall. A few second proofs have already been dispatched to compilers in fact, and the remainder will follow between mid-August and the end of September as they are received from

MapQuest. Only one proof should be required for the three overview outline maps showing Roman province names and boundaries at successive stages (Maps 100–102), and these will be corrected alongside the second proofs of the rest.

With the Atlas now firmly scheduled for publication in September 2000, Princeton University Press has confirmed its request for delivery of all text material for the volume (front matter, gazetteer) by November 1999, and of all remaining materials (maps, Directory) by January 2000. The project – with MapQuest’s invaluable assistance, as ever – expects to meet these deadlines. As will be apparent, the Press has accepted the opportunity to publish the *Map-by-Map Directory*, both in print (2 vol. set totalling approximately 1,500 pages) and on CD-ROM, on terms defined in an addendum to the original contract made with APA.

In addition, the Press has recently issued a handsome brochure which invites pre-publication orders; details can also be found on the Project webpage www.unc.edu/depts/cl_atlas. The Press means to promote the Atlas extensively. While respecting the Project’s longstanding wish that the price of the volume be kept in the region of \$200, the Press argued persuasively for making the Atlas volume and the CD-ROM Directory a single, indivisible product, and on this basis the offer price of \$250 for both items is acceptable. The print version of the Directory is offered separately for \$100.

The cartographic magazine *Mercator’s World* has accepted an article about the making of the Atlas for its November/December 1999 issue. All 99 finished maps together with the three Roman province overviews are to be displayed at the Joint APA/AIA Meeting in Dallas, TX, at the end of December.

In June Mr. Robert Strassler and the Barrington Foundation duly fulfilled his pledge to contribute \$1 million to the project. In accordance with the agreement drawn up between himself, APA and UNC, the Atlas is therefore named the *Barrington Atlas of the Greek and Roman World*. New awards have been made by the Finnish Academies of Science and Letters (\$1,800), the Andrew W. Mellon Foundation (\$125,000), the Stavros S. Niarchos Foundation (\$XXX: n.b. *The Foundation is willing for its support to be made known, but not the amount*), and the Society for the Promotion of Roman Studies, U.K., in support of Map 100 (\$3,177).

The Director displayed almost the complete set of 99 maps (in first or second proof) at the Third Roman Archaeology Conference in Durham, U.K., during April, and a smaller group centered on the Aegean at the 18th International Conference on the History of Cartography in Athens, Greece, during July. Both displays attracted wide interest.

In order to continue, improve and expand the work of the Project on a permanent basis, UNC Chapel Hill has generously offered to fund the major

costs involved in establishing an Ancient World Mapping Center here. For the transitional year 1999–2000, UNC will pay the rent for the Project's present off-campus space, and will then move it onto campus (almost certainly to Davis Library in the first instance, where some suitable space has already been identified). A range of funding support has already been secured too, together with a commitment to cover the appointment of a Center Director (starting assistant professor level, non-tenured) for three years. Subject to the approval of APA's Board of Directors at its October meeting, this Center would be formally launched in fall 2000 (to coincide with the publication of the Atlas), and jointly managed by UNC and APA. During the initial three years there would be every effort to raise an endowment that would make the Center as far as possible self supporting.

August 1999–February 2000

In each successive half-year the Project's workload seems to grow heavier, and these most recent six months are no exception. By the beginning of August, only a handful of second-proof maps and their accompanying Directories had been dispatched to compilers for final correction and adjustment. By the end of January, all the remainder (over 90 maps) had been dispatched thus, returned by their compilers, approved in the Project Office, and forwarded to MapQuest for production of final proof. After this proof had been checked one last time by the Project Office, film or ready-to-print PDF files (according to each map's production method) were dispatched by air freight or courier direct from MapQuest to the printer Eurografica, Vicenza, Italy. At the end of January, only the three overview outlines of Roman provinces (Maps 100–102), together with the front- and endpapers, remained to await clearance for imminent shipment. As always, MapQuest merits the highest praise for the professionalism of its work, and for its commitment to meeting the Project's very demanding schedule for delivery of final proof.

Meantime the extensive front matter for the Atlas volume was delivered to Princeton University Press in early December, and proof supplied to the Project Office in late January. A jacket design is in preparation at the Press. The gazetteer for the end of the volume (listing alphabetically the names of all places and features marked on the maps) is about to be delivered as a PDF file early in February. It contains around 24,000 names. This leaves only the Map-by-Map Directory to be finished and delivered, a final step that should occur during March. The format of the print version is to be 8.5 × 11 ins., and at that

size its two volumes will extend over approximately 1,550 pages. The CD-ROM of the Directory that accompanies every Atlas volume will also include the gazetteer.

Compilers' good sense and responsiveness did much to sustain the brisk pace of this half-year. A gratifyingly high proportion of them duly respected the tight deadlines prescribed for return of material, and heeded the insistence that at this stage correction and adjustment must be confined to matters of substance only. Hence it was gratifying, too, that little change was called for on most maps. That said, the expense and difficulty of making even modest changes to film-produced maps, as opposed to digital ones, became the source of some frustration and concern. Little could be done, however, to alleviate these high costs, beyond recalling that earlier, at first-proof stage, digital production had normally proven the more expensive process.

In the Project Office, most of the credit for such a successful half-year goes to Brian Lund, who worked with tireless efficiency and precision to prepare the gazetteer and Directory for production. His role was almost fulfilled by the end of January, when he had the opportunity to move to another challenging position, and rightly took it. This leaves the final stage to be completed by the Director, ably assisted again part-time by Tom Elliott, whose remarkable expertise in matters both classical and electronic is invaluable for the purpose. He has been the creator of the CD-ROM formats for both the gazetteer and the Directory. Sviatoslav Dmitriev (whose work for the Project now comes to an end) continued his thorough checking of Directory material at Harvard. In Chapel Hill, Nora Harris, an undergraduate employed under the Work Study scheme, has been a reliable proofreader and helper.

As indicated above, all this work should be accomplished before the expiry (April 30, 2000) of the second no-funds extension kindly granted by NEH. Princeton U.P. has continued its active campaign to encourage orders for the Atlas at the very attractive pre-publication price. The Director's colorfully illustrated article "Divide and conquer: the making of a classical atlas" appeared in *Mercator's World* for November/December 1999.

Selected maps (in particular those of Greece and the Aegean) were displayed in connection with a presentation about the Project made by the Director to the 11th International Congress of Classical Studies, Kavala, Greece, on August 26th. All 102 maps for the Atlas were displayed in an ideally spacious, well-lit room at the Joint Meeting of the American Philological Association and Archaeological Institute of America, Dallas, TX, on December 29th.

Plans for the housing, funding and initial activities of an Ancient World Mapping Center at UNC Chapel Hill (to continue, improve and expand the work of the Project on a permanent basis), are developing productively.

February–May 2000 (final report)

The Project's closing stages have proved exceptionally stressful, but it is a pleasure to report that the work has been accomplished in full. Early in February, MapQuest completed delivery of final film and discs for the printing of all 180 folio map pages by Eurografica, Vicenza, Italy. At that time, too, the Project Office was able to deliver to Princeton University Press the gazetteer which forms the final component of the Atlas volume. Even this simple listing of all the names appearing on the maps runs to 43 pages in five-column format. Its compilation was primarily the work of Tom Elliott. From February onwards he likewise played a major (and outstandingly creative) role in preparing the Map-by-Map Directory both as CD-ROM and as PDF file for printing. Nora Harris (employed through the Work-Study scheme) ably assisted him.

Some streamlining of the Directory's presentation (bibliographies in particular, which are now in two-column format) has reduced its estimated total length of 1,550 pages to an actual 1,400. Even so, it would be hard to overstate the seemingly endless obstacles to completing it and ensuring its satisfactory operation (for searches, printing, etc.). All were, however, at last overcome by early May. I especially appreciate the prompt responses received from those compilers who had to be consulted for one item or another of further information at a very late stage. Jamie Woolard's help in making last-minute checks at Princeton was no less valuable. To assist searches, the gazetteer which concludes the Atlas volume is also appended to the CD-ROM. Of the two printed Directory volumes, the first covers Maps 1–48, the second Maps 49–102.

In the third week of May the Atlas volume was printed at Eurografica. Jan Lilly from Princeton, together with Mike Ruemmler and Dave Stong from MapQuest joined me for the press-check, and the entire delicate operation was accomplished more smoothly than we had dared hope. MapQuest was exceptionally generous in sending its two experts for only a token charge. Since the presses operate relentlessly round the clock, and a new 'form' has to be inspected every two hours on average, it was invaluable to have a team of four to call upon.

By now, therefore, the Project Office and MapQuest have completed all the parts of the work for which they can be responsible. Binding, distribution and so forth lie entirely under Princeton's control.

The deep sense of satisfaction and relief which we can all deservedly share must be tempered by realization that the final map production costs have still to be met. Changes requested to second proofs, even when kept to an essential

minimum, often proved very expensive to implement, especially in the case of maps produced by the film-based method. These costs must be met before vicars and compilers can be paid the final installments due to them. Needless to add, there is every intention to make the payments, and every likelihood of being able to do so in due course, given the prospect of healthy sales for the Atlas, as well as the anticipated development of further materials of various kinds derived from it. MapQuest is reacting to the delay with characteristic sympathy. The surprise is surely that such an obstacle never took hold earlier, and that despite one now the Atlas and Directory will be published on schedule.

Plans to establish an Ancient World Mapping Center in Chapel Hill from Fall 2000 are moving ahead. From the outset, through the Web, the Center will offer the opportunity to comment on the Atlas and Directory, and will post approved corrections, revisions and further relevant information there. This last category may include (with permission) those statements by compilers about the placement of individual sites or features which did not fit the format for introductory texts in the Directory.

With the publication in September of the *Barrington Atlas of the Greek and Roman World* and its accompanying *Map-by-Map Directory*, the Project will more than fulfil the hopes of the APA ad hoc committee on basic research tools which called for such a work in 1980, as well as the goals laid out (after abortive early stages) for NEH support since 1991. Warmest thanks to NEH are expressed in the work, copies of which will of course be presented on publication.

Maps for the Classical World: Where Do We Go from Here? (*American Journal of Philology* 118.2: 1997. pp. 323–27)

The APA's Classical Atlas Project was conceived as the means to an end, and rightly so. Good maps were taken to be vital tools for understanding ancient history and culture at any level, and the ones available in the early 1980s were altogether woefully inadequate. The project was designed to fill this void by preparing a comprehensive atlas for publication in the not-too-distant future.

To make a definitive claim at this moment that the target of publication by the end of 1999 will be met must still rank as *hubris*. Without doubt, however, the odds have increasingly shifted over the past few years in favor of timely completion. As everyone knows, the problems of designing, funding, and developing any ambitious collaborative project are immense, and the atlas has been handed its full share of such difficulties and more. Yet gradually the difficulties seem to have been surmounted, and the project – at present, anyway – remains resolutely on schedule, as much to the surprise of its Director as to everyone else.

As the odds have shifted, so, too, has my own perception of the project as an end. To be sure, the maps appearing in the atlas volume will offer the intended comprehensive vision of the physical and cultural landscape of classical antiquity that has been so seriously lacking since Carl Müller provided the last one for William Smith's *Atlas of Ancient Geography* in the 1870s. Further gains are assured, too. In particular, to accommodate different needs, it should certainly prove practical to issue the maps in a variety of alternative formats – in sets of loose sheets, for example (with or without cultural data marked on the ancient physical landscape), as wall-maps, slides, digitized images, even a reduced-size textbook atlas. One way or another, these maps have the potential to exert a formative influence on our perception of the classical landscape for many decades to come.

Even at the current stage, well before publication, the Atlas Project has already stimulated fresh attention to cartography: this has grown without any

special effort on the project's part. Most notably, colleagues have become aware that there is now for the first time somewhere to which they can turn as they seek out suitable cartographic materials and design for their research or publications or field survey.

Classical studies worldwide would benefit immensely if that "somewhere" were to be made a permanent "center," established around the same time as the publication of the *Atlas of the Greek and Roman World*. In the creation of the atlas, both materials and expertise have been accumulated, which it would be irresponsible simply to abandon. The materials cover a wide range – from elements for all the aeronautical charts forming the physical bases for the atlas maps, to copies of older rare maps devoted to classical antiquity.

Such maps (and whatever text accompanies them) are by no means necessarily all about to be rendered obsolete by the atlas. The French "archaeological atlases" of Algeria and Tunisia, for example, were compiled by the Brigades Topographiques in the late nineteenth and early twentieth centuries at scales as generous as 1:50,000, whereas the atlas limits itself to 1:500,000 in this region (and the area covered by one map at 1:500,000 corresponds to literally dozens at 1:50,000). Thus for any study with a close focus on Algeria or Tunisia, these French series remain indispensable, although the Tunisian one, with its two editions, is exceptionally rare and hard to obtain. Typically, the few libraries that hold this material have bound the original loose sheet maps into books (rendering it impossible to use the sheets individually), and for obvious reasons, they are not willing lenders. The Atlas Project, I imagine, has been the first to photograph the printed map sheets onto transparent plastic positives. These are sturdy, dimensionally stable, and immune from the fading and deterioration of paper; in addition, when they are laid on top of other maps, everything underneath remains visible.

Examples of further cartographic materials for the classical world which will continue to be indispensable, but rare to the point of being well-nigh unobtainable, could be multiplied. Not all have even been tapped by the Atlas Project in view of its deliberate decision to concentrate on certain types of maps at relatively modest scales. But the importance of many other types of maps, at large scales especially, is not in doubt. No city-plans, for example, feature in the atlas, although everyone appreciates their value; yet (to cite North Africa again) none has been made for Carthage since Pierre Bordy's of a century ago, and it, too, is another rarity.

Ideally a center – headed by a young scholar – should be created for the specific purpose of gathering and making available all materials relevant for mapping the classical world. By definition, those already accumulated by the Atlas Project could serve as the initial nucleus. To the best of my knowledge, at present no library or map collection anywhere in the world has developed this

as one of its principal concerns. A center, however, could go further in offering expert help to researchers and authors as they plan and design maps. Unfortunately, all too often authors and even publishers seem not to appreciate that good cartography is likely to require some expert help: with it, the quality and value of the results can be tremendously enhanced. At present it may be more a matter of not knowing where to turn than of not wanting assistance. A center could become an invaluable resource to help with a wide range of needs.

Wherever such a center is located, at least three types of reinforcement must be readily accessible. Naturally, it must be able to maintain its cartographic and classical focus by being linked to a major research library with strong holdings in the field. Second, and equally vital, is a map collection with extensive modern holdings, especially large-scale national and military series, both pre- and post-World War II. If only because so much man-made landscape change postdates 1945, large-scale maps of the interwar period could make a unique contribution to recreating a region's earlier appearance. Looking ahead, the map collection ought also to be one that regularly acquires new and revised U.S. Defense Mapping Agency materials [From October 1, 1996, renamed National Imagery and Mapping Agency]. Third, sympathetic and informed technical support has to be available. Above all, it is clear that the scope for digitizing maps, transmitting them electronically, and transferring them to paper economically with a color printer, will continue to grow at a remarkable pace. It seems too ambitious to expect a center to be staffed and equipped at a level where it could keep abreast of all relevant technological developments independently. A more practical goal is surely to combine focused expertise with a standing arrangement to seek further support elsewhere. Already there has been much interest in DMA's seamless Digital Chart of the World (derived from the conventional Operational Navigation Charts), although the project's experience in using it to produce all forty-seven maps at 1:1,000,000 for the atlas has shown it to be defective in many respects, and seldom easy to manipulate. There is likely to be even greater interest in the Tactical Pilotage Charts (1:500,000) when these are eventually released in digital format, though again assistance may prove welcome.

One valuable enhancement of the atlas which a center could at once undertake after publication is the compilation of maps at 1:1,000,000 for those regions which will otherwise only appear at 1:500,000 (such as Italy). With data selectively reproduced from the larger-scale maps, digitized coverage at 1:1,000,000 can readily be made comprehensive in this way. Later, whenever the TPC series becomes available digitally, the maps at 1:500,000 based on them could be digitized, too. To work through the entire set of forty-three

would be a formidable challenge: yet there can be no question that this enhancement holds by far the greatest potential to increase the value of the atlas indefinitely. For that very reason, too, the prospects for securing the necessary major funds seem particularly favorable.

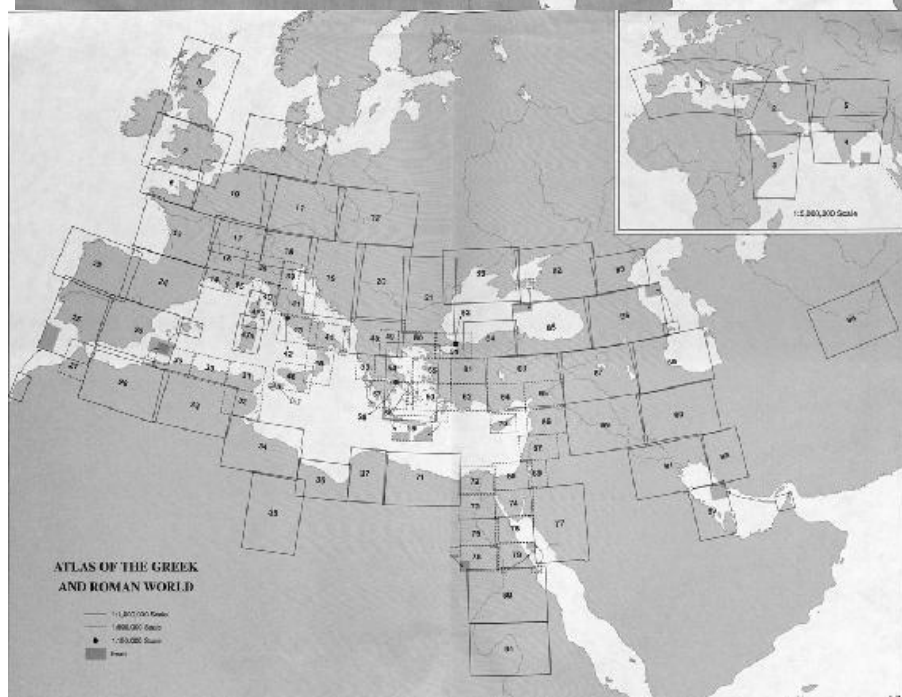
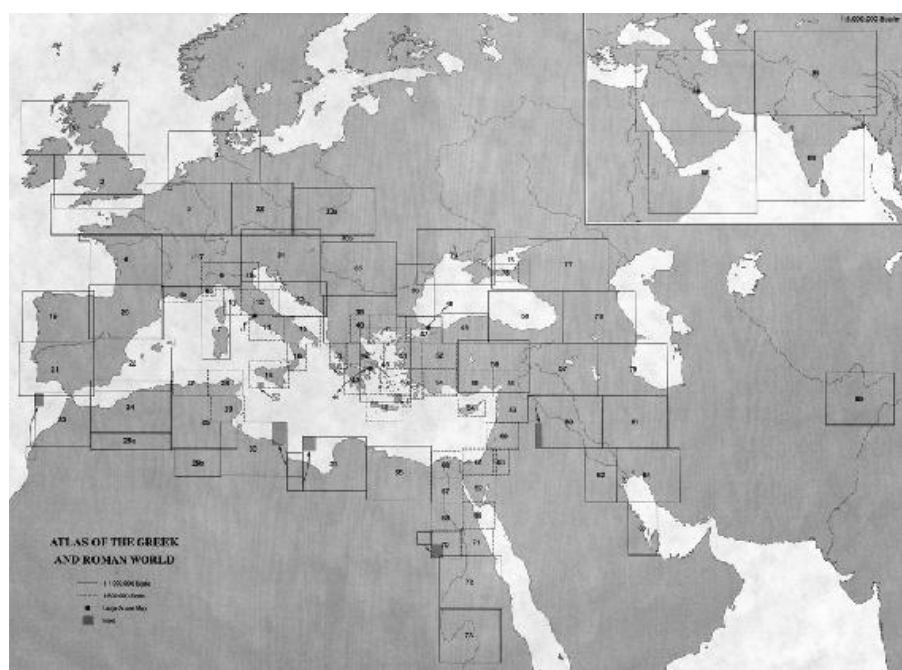
Meanwhile it would be practical, and equally useful, for a center to prepare for the periodic revision of any map once fresh insight or new data have significantly advanced our understanding of the region covered. The need will arise sooner for some maps than others, and in any event there is a limit to what a modest center could be expected to achieve in this regard. The original compiler would need to be consulted wherever possible, and the pace of change could also be monitored through such overviews of new data as *SEG*, *AE*, and the regional reports in *AJA* and *Archaeological Reports* (*JHS*). Even now, several colleagues with important new information at their disposal that merits incorporating on a map before it reaches final proof are being generous enough to offer it spontaneously (with due acknowledgement to be given, as always). Their concern that the atlas reflect current knowledge as accurately as possible is much appreciated, and the hope must be that kindness of this type will continue. Under certain conditions a center might offer to share whatever changes to a map it already had on file at any point, awaiting the preparation of a full revision.

Revision of a map would demand corresponding attention to its Directory, where further information is given about each name or feature marked. As an intermediate stage, however, it could prove sufficient (and normally less complex and costly) to issue a revision of the Directory alone. In part, the purpose might then be to correct errors and omissions. Although every reasonable effort is being made to eliminate these, inevitably in a work of this magnitude and detail some will remain. On publication, the atlas team must surely brace itself for an outpouring of “corrective” articles such as followed the appearance of *The Prosopography of the Later Roman Empire*, vol. 1 (1971).

Revision of atlas material – map or directory – will have to be a piecemeal process: but this is what is called for. The essential point is that there be active concern to see this need addressed. Merely to publish the atlas, and then to ignore its improvement and updating, would be to lose a unique opportunity. Knowledge of the classical world advances impressively year by year; at the same time the technology for making and issuing revisions becomes increasingly refined and flexible.

Publication of the atlas will at last re-establish cartography as one of the basic subdisciplines within classical studies after a century or more of neglect. In the new millennium it is vital to continue building on the materials and knowledge accumulated thus far, so that cartography’s potential continues to be exploited and extended. An exciting new phase now opens up, for which

the atlas is only a beginning.

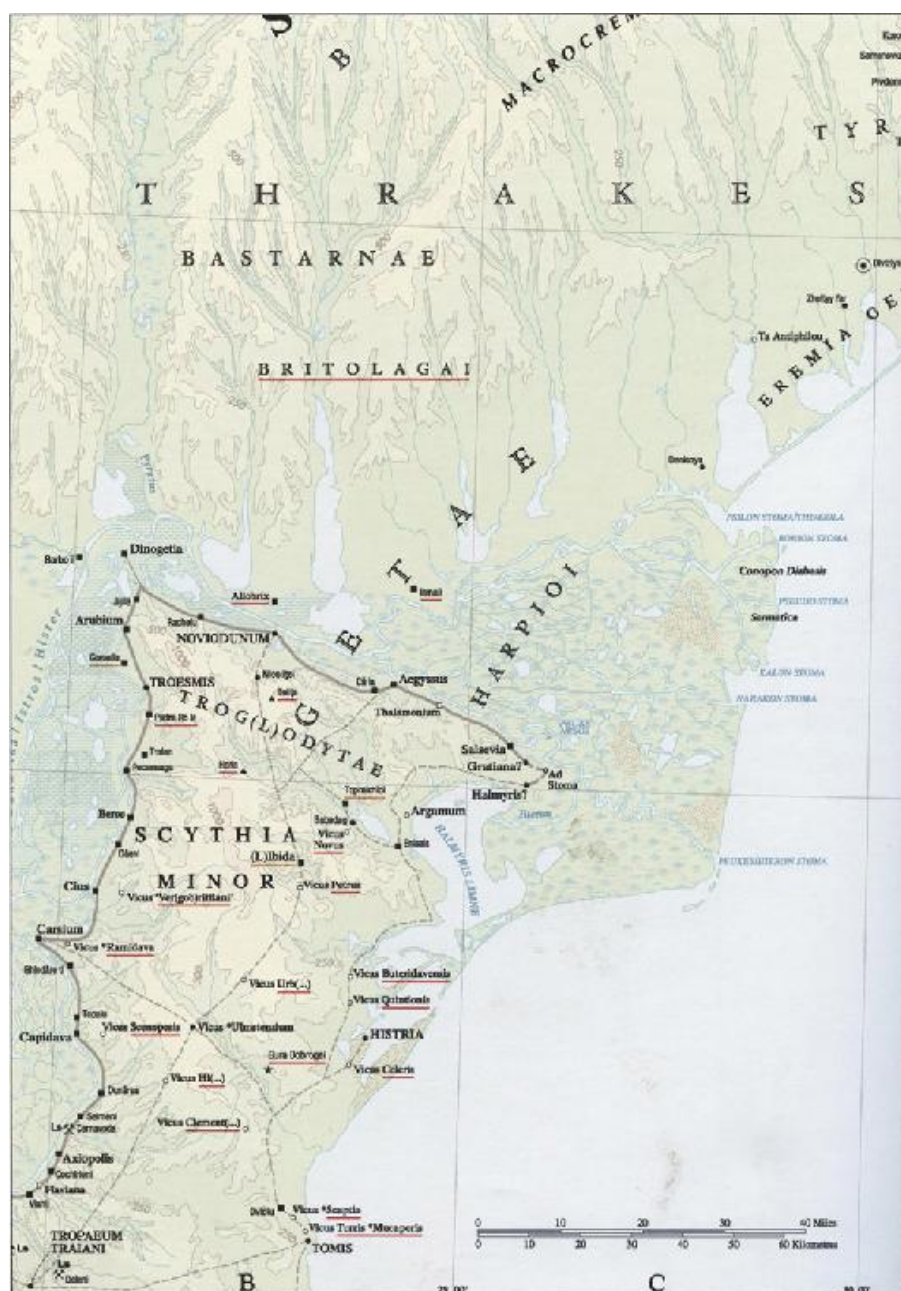


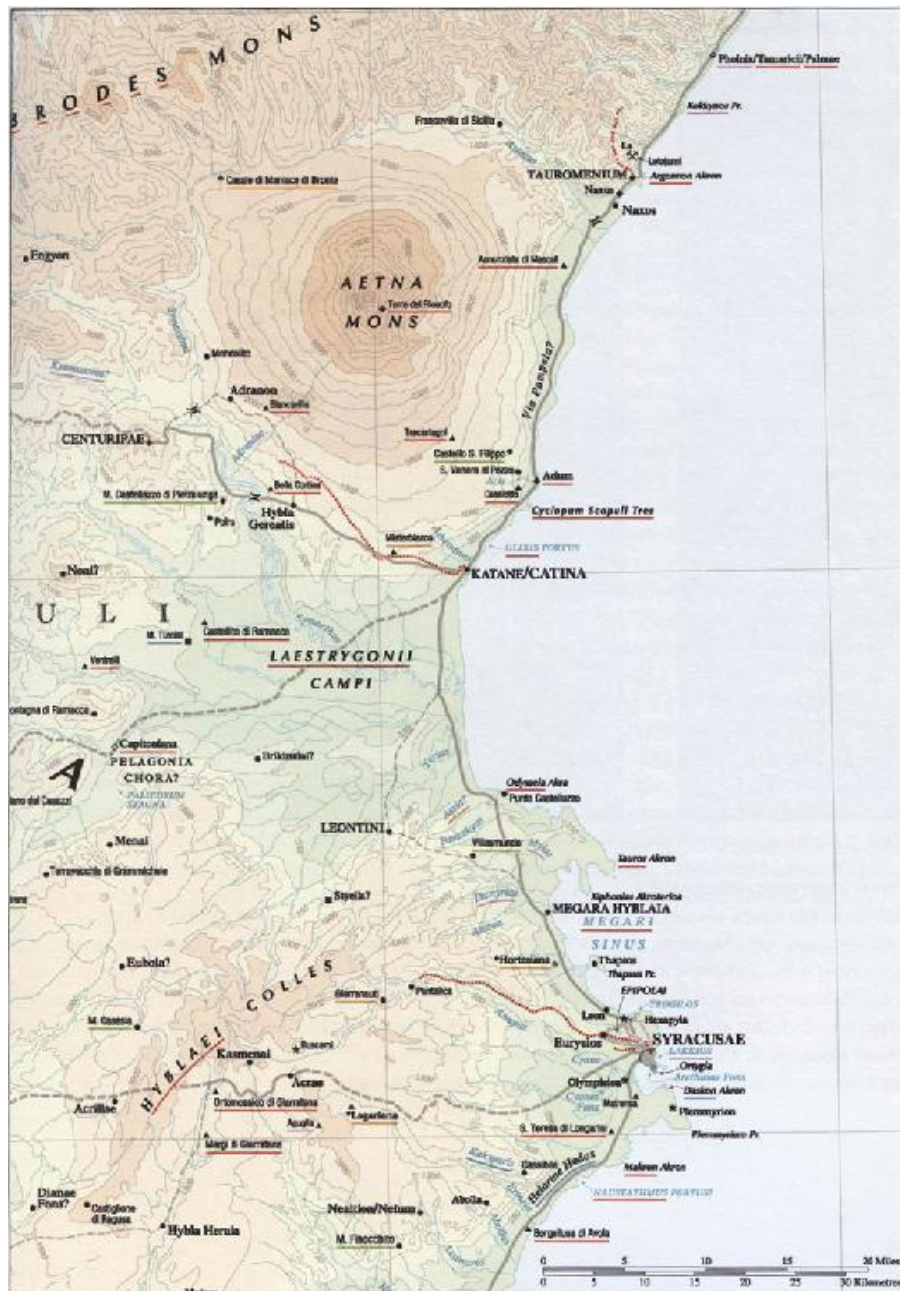


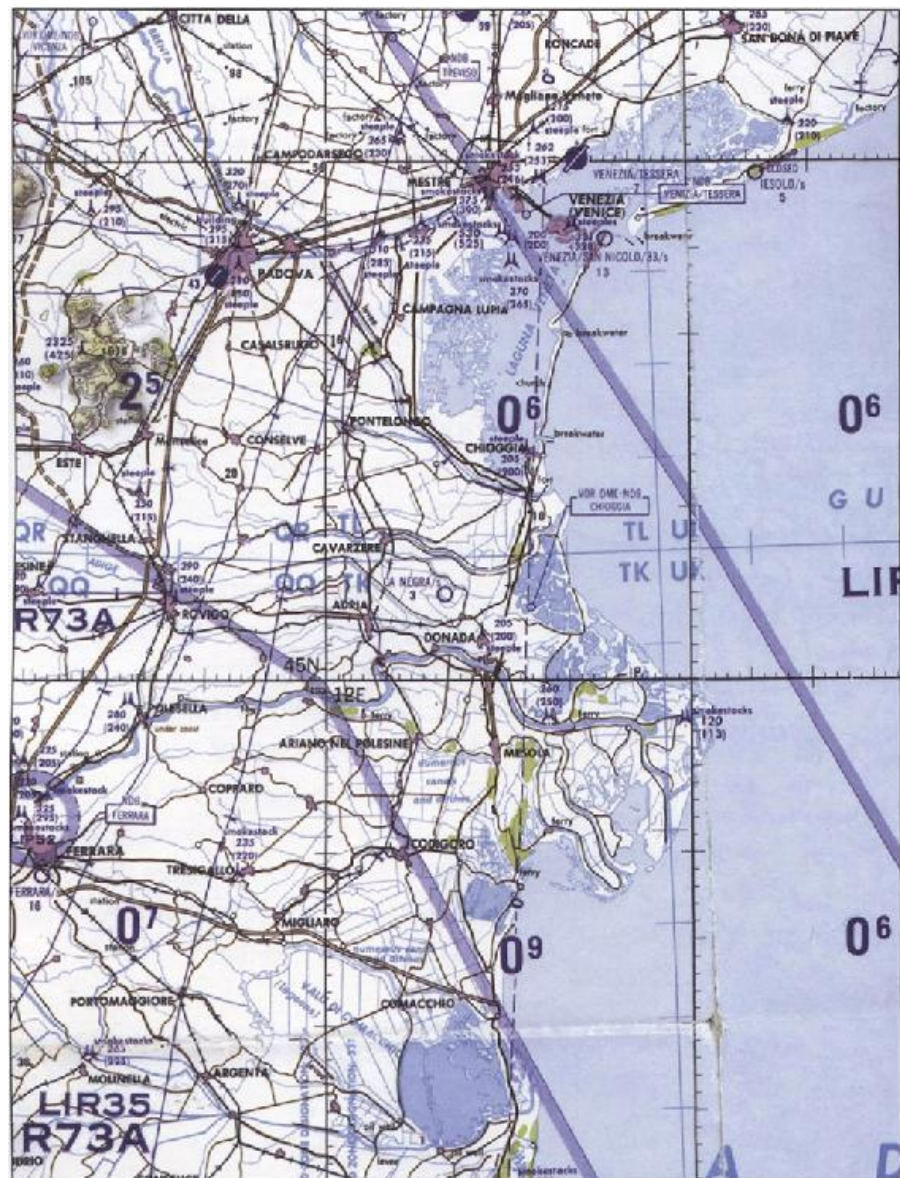




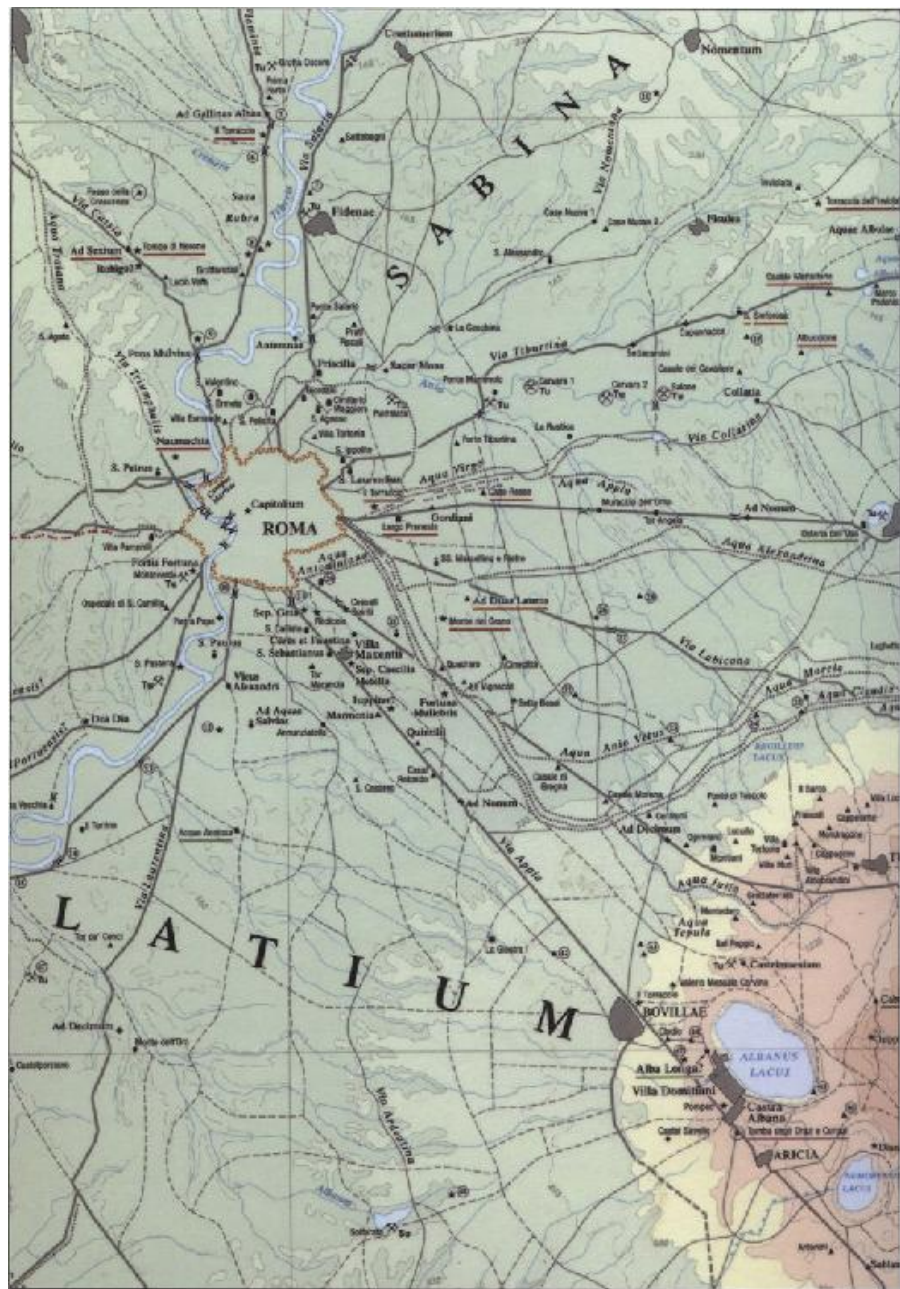


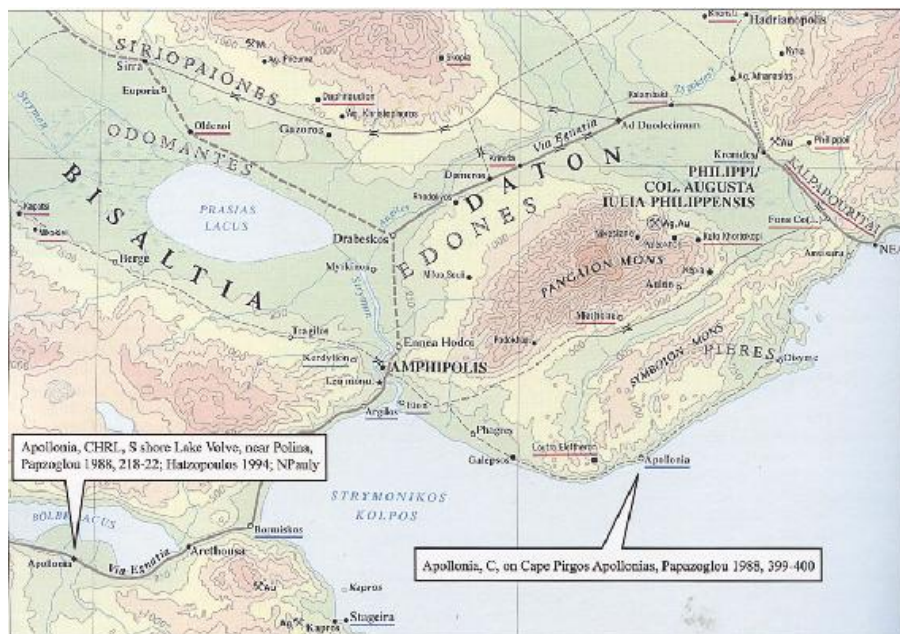












12

Barrington Atlas of the Greek and Roman World: The Cartographic Fundamentals in Retrospect (Cartographic Perspectives 46: 2003. pp. 4–27 and 72–76)

Background

In time, space or purpose, the prospect of any close link between the *Barrington Atlas of the Greek and Roman World*¹ and the *Historical Atlas of Canada*² might seem remote indeed. As editor of the former, however, I instantly realized otherwise when first encountering the reflections of the director (Dean) and two editors of the latter (Cole Harris, Holdsworth) on their

experience published in *Editing Early and Historical Atlases: Papers given at the 29th annual conference on editorial problems, University of Toronto, 5–6 November 1993*.³ Naturally, to learn that in a quite different field others before you had wrestled with similar dilemmas, and had chosen to resolve them in broadly similar ways, is not enough to place your own choices beyond reproach. But such a discovery does offer reassurance; it acts to relieve a depressing sense of isolation, and demonstrates that your own painful choices need no longer be regarded as merely idiosyncratic.

At first glance, to be sure, when set against the *Historical Atlas of Canada* and most other modern atlases, the *Barrington Atlas* may well seem out of step with current trends: it emerges from a historical field where for decades there had been no more than scant regard for cartography,⁴ and it presents maps of physical and cultural landscape rather than of themes. Among scholars of classical antiquity worldwide, it was in fact the leading North American professional organization in the field, the American Philological Association, which first specifically articulated the need to reintroduce the cartographic dimension to the study of ancient history. The recommendation dates to 1980, and stems from a specially commissioned effort to identify research tools of outstanding potential value to the discipline, but lacking at that date:

We come, finally, to an area of extremely great importance, where the state of our tools is utterly disastrous, cartography. There is hardly anything more important to understanding ancient history than a clear conception of the terrain on which its events took place. But the best available maps, the old Kiepert ones, are virtually unavailable, and nothing really useful has become available for most areas in the last few decades. The *Tabula Imperii Romani* proceeds at a snail's pace, parcelled out among the modern countries its sheets cover (not always those where the best scholars for the purpose are found) and appearing, when it does, in different styles everywhere. A concerted attempt to produce a uniform series of maps which show both the topography – with all the sophistication of modern cartography – and the ancient toponyms – with the accumulated knowledge of classical scholarship – would be immensely valuable.⁵

Heinrich Kiepert (1818–1899), to whom the recommendation refers, had been the most active cartographer of the Greek and Roman world in the nineteenth century, and the production of the great atlas, *Formae Orbis Antiqui*, which he intended to be the climax of his life's work was even continued after his death by his devoted son and fellow cartographer, Richard (1846–1915). Nonetheless, only just over two-thirds of its planned comprehensive coverage had been

completed on the latter's death; nothing more was issued.⁶ The maps never achieved wide circulation, and by 1980 they were hopelessly outdated in many key respects. A wealth of new discoveries and advances in scholarship had occurred during the intervening sixty-five years. Moreover even at the small scales typically adopted, the grasp of physical landscape reflected for many regions – especially elevations inland – was limited, indeed sometimes non-existent (aerial mapping lay in the future). For production, the strong preference was still for printing from an engraved copperplate rather than resorting to lithography.

Between World War I and 1980, fresh initiatives for mapping the Greek and Roman world were badly lacking, so that in fact the last completed major classical atlas remained the even older *Atlas of Ancient Geography Biblical and Classical*, edited by William Smith (1813–1893) and published by John Murray, London, in 1872–1874. This remarkable work, however, was so rare as to be all but forgotten after World War I.⁷

The one initiative to hold out some promise was that cited in APA's recommendation, the *Tabula Imperii Romani* (TIR), an international project to map the Roman empire. Proposed by O.G.S. Crawford in England at the end of the 1920s, it was a visionary scheme to mark Roman cultural data on physical bases furnished by the relevant fifty-six sheets of the (then developing) International Map of the World series at 1:1,000,000 scale (IMW). This TIR project is still ongoing in fact,⁸ and it has unquestionably done some excellent work, albeit sporadically. However, the scholarly community worldwide was slow to recognize that it suffered from some fundamental flaws which even today have yet to achieve resolution. In consequence, therefore, the hope that TIR would furnish an adequate series of maps for the classical world persisted for too long, and discouraged efforts by others, when in reality all such hope was unjustified. In particular, clear editorial policies for the maps were never established, so that the categories of data to be marked on them, and the precise conventions to be adopted, were never defined, let alone adequately regulated by a coordinator. At the same time, the project's structure has always required that only a committee appointed by the modern nation whose territory occupies the major part of the requisite IMW sheet possesses the authority to issue it in the TIR series. If, therefore – as all too often occurs – the nation concerned shows no interest in sponsoring the sheet, even when others with territory there are willing to proceed, a lock is placed on progress in that region. Predictably enough, ever since the 1920s modern nations – for all kinds of reasons – have varied in the degree of their willingness to sponsor TIR sheets. As a result, even today, the coverage achieved is patchy (no more than approximately one-third complete), lacking in uniformity, and unlikely ever to attain the project's final goal without radical change.

APA's recommendation in 1980, with its firm rejection of any further reliance on the hope that TIR might soon furnish adequate maps of the classical world, was a bold and vital step forward. Even so, for some years thereafter, progress on the fresh initiatives that APA set in motion was disappointing. A bibliographic survey *Map Resources for the Greek and Roman Worlds*, with fifteen regional sections, was commissioned, but never achieved completion and publication. Meantime, for a range of reasons – conceptual, organizational, financial, personal – a project to plan and produce a major atlas was wound up in 1987, with nothing attained.

It was against this somber background that I was approached by APA's Vice-President for Research in December 1987 and was asked to launch a complete fresh start on the planning and production of an atlas. From APA's perspective, the approach made sound sense. I had gained some unique relevant experience from the production of a modest textbook *Atlas of Classical History*, involving twenty-five collaborators (all in the British Isles) and published in 1985.⁹ It was only in the same year that I emigrated to North America, so that I had no prior engagement with, or even knowledge of, APA's failed ventures into cartography to date. From my perspective, APA's invitation was daunting, yet both intriguing and timely. On the one hand, it so happened that within the previous three years I had finished both the textbook atlas and another short book, as well as a third very long one, and I had not yet settled upon a further major project. I was keenly aware of the lack of a major classical atlas, and the urgent need for one. On the other hand, what APA envisaged was clearly something far larger, more ambitious and more costly than the textbook atlas; many of its maps consisted just of outlines, and all had been limited by a minuscule budget.

Personal considerations aside, at this point the prospects of providing APA with the successful outcome it sought could hardly have seemed bleaker. Some manifestly idealistic and impractical ideas were aired at our initial meetings. But the fact was that, even by now after several years, APA's committee members and other interested colleagues still had no agreed vision of precisely what mapping should be attempted, how it should be undertaken and within what timeframe, what it was likely to cost, where the funding would be found (although APA did pledge support in the search), and how the results should best be disseminated. If nothing else, then, I was being offered an extraordinarily open opportunity to create and develop a major work of lasting value. To be sure, there were immense risks of every kind in prospect, and naturally APA's approval would be essential for whatever plan was formulated; but for a reasonably practical proposal such approval might now be easier to secure while the memory of recent failures was still vivid. So all in all it seemed that I had little to lose by agreeing to work for APA – another

failure would be no surprise either; indeed, many expected just that – and hence I succumbed to the temptation. In retrospect I could echo Cole Harris’ reflections on agreeing to edit Volume 1 of the HAC:

The lesson, presumably, is not to underestimate the work in a major atlas, and yet, had I not been optimistic, I would never have agreed to edit this volume, while SSHRCC [Social Sciences and Humanities Research Council of Canada], had it known what lay ahead, probably would never have funded us. *A measure of naïveté may be necessary to launch historical atlases.*¹⁰

Framework

The initial year and a half (early 1988–mid 1989) I spent trying to determine the most satisfactory solution to the network of fundamental unresolved questions outlined in the previous paragraph – the entire network, let it be stressed, because the questions were inextricably linked, and adoption of the most desirable solutions to some might simply not take adequate account of others. In short, what I needed to address, to use Dean’s term, was ‘atlas structure’, “those elements which give an atlas direction, purpose, and appearance. In other words, [‘atlas structure’] is the framework whereby atlas maps are selected, designed, drawn, and arranged.”¹¹

During this initial phase the full force of what was lacking struck me. Altogether, the part of the globe over which Greeks and Romans had settled, fought and traded was vast, stretching from the British Isles to North Africa and eastwards to Sri Lanka. Detailed maps of large segments of this total area as they were during classical antiquity (however its timeframe was to be defined, another key issue) had never even been attempted, east of the Mediterranean especially. Elsewhere the coverage, such as it was, remained most unsatisfactory. For most of the Iberian peninsula and Gaul, as likewise for Italy and Greece – the heartlands of classical civilization – the only detailed maps predated World War I, and many adopted very small scales. It was this realization of how shockingly poor a grasp our discipline had of the geography of its world – an aspect never in doubt, naturally, for the planners of the HAC – which determined me to make physical and cultural landscape the main focus of my effort for APA. I was aware that an ongoing project of tangential significance – the *Tübinger Atlas des Vorderen Orients* (TAVO) – had chosen differently.¹² The maps in its most relevant sections (B IV, V and VI) are primarily thematic, and valuable as such. But by definition anywhere west of the Aegean falls outside TAVO’s scope, and more generally my view was that

the establishment of a clear overall sense of geography ought to precede a major effort at thematic mapping. Rather, the latter can, and should, build on the former.

I formed the view, therefore, that the appropriate goal for what would become the *Barrington Atlas*¹³ was coverage of the physical and cultural landscape across the *entire* vast span of territory encompassed by Greek and Roman civilization. Even at this preliminary stage it was obvious that much other mapping could usefully be attempted, but it was also self-evident that such efforts might prove over-ambitious. The main goal alone, I estimated, would take perhaps a decade to achieve, and would in all likelihood suffice to exhaust the energy and enthusiasm of all those involved (myself included), not to mention sources of funding. Further initiatives were better kept separate and subsequent to achievement of the main goal, especially in view of the urgent need for such basic maps.

The longterm mapping projects best known to me – Kiepert's *Formae*, *TIR* and its equivalent *Tabula Imperii Byzantini* for the Byzantine world,¹⁴ as well as *TAVO* – all issued their maps in loose sheet form, either individually or in fascicles, as they proceeded. Inevitably, this practice leads to some inconsistency in presentation, deters private buyers, and requires libraries to limit access to items that are so fragile (the more so when issued folded) and easily removed. My wish for the *Barrington Atlas*, by contrast, was for it to be a sturdy single volume, large in size although not unwieldy, and available at a price within the range of private buyers, high though the cost would have to be. The presentation must be attractive, in a contemporary style, and aimed at a circle of users and purchasers extending well beyond a narrow, introverted specialist group. To charge, say, upwards of U.S. \$1,000, therefore (the level of pricing set by *TIB* and *TAVO*, for example), would so restrict circulation of the project's results as to undermine its very purpose.

A single volume would unmistakably highlight the sheer span and diversity of the Greek and Roman world. Moreover it could incorporate the comprehensive gazetteer that none of the other projects mentioned was at that date in a position to furnish. This said, the wish for a single volume created additional risk because so long as even a single map for it remained unfinished, the work could not proceed to press; meantime the completed components would simply have to be suspended in limbo, to the intense frustration of those colleagues who had contributed them.

Partners

At this initial stage it was far from clear to me how an atlas of this scope and nature was actually to be created. What quickly did become evident, however, was that I should not even attempt to proceed further without engaging two key partners, a publisher and a cartographer. Both APA and any potential contributor of major funding had to be satisfied from the outset that publication of the project's results was assured. In addition, there is no means of laying out the maps for an atlas until the basic format of the volume is securely established, and this of course must be an initial step that cannot be postponed till later (as it typically is with a work that is primarily text). I approached four leading North American university presses, and was in turn approached by a fifth. Since all showed interest, the choice was a difficult one. In the end it fell upon Princeton in view of the quality and visibility of its list, especially in the classical field, and of my own favorable previous experience of working with the outstanding Classics editor, Joanna Hitchcock. Princeton was willing to permit the atlas format to be folio – in other words, the largest format that is both reasonably economical for production and convenient for the individual user to handle. Princeton also affirmed that the binding for the volume could be handsewn so as to permit a doublespread map to run across seamlessly without a central gutter becoming visible or any map data at each page's edge disappearing into it.¹⁵ Consequently, a framed map occupying an entire single page could measure 17 ins. tall by 11.75 wide, and a doublespread could extend for 24.5. 'Bleeds' of up to approximately half an inch beyond the map frame could also be accommodated.¹⁶

The search for a suitable cartographic partner posed a far tougher challenge. It clearly had to be one capable of handling a very substantial volume of work without long delays; this ruled out small companies, for example, as well as cartographic units within universities. At the same time, it was vital that the cartographic partner have experience of, and sympathy for, the creation of a major historical atlas, along with the ability to take a prominent role in designing absolutely every feature of a new one from scratch. A partner that would require, for example, the use of its existing 'house style' for presentation of the maps was ruled out. I cannot better Dean's summary of the need: "In atlases, besides the usual decisions having to do with texts of various kinds there are innumerable decisions regarding the maps and any other illustrative materials. Every bit of line work, every space, every symbol, every colour or shade, every piece of type, every typeface, every legend on a map, requires thousands of precise decisions."¹⁷

Among the very few recommendations that the Association of American Geographers was able to make for potential partners capable of meeting such taxing requirements, only one stood out – the Cartographic Services unit in Lancaster, PA, of the prominent Chicago printers R. R. Donnelley and Sons.

Here the lead was taken by Barbara Petchenik, who had been cartographic editor for the great *Atlas of Early American History: The Revolutionary Era 1760–1790*,¹⁸ and had continued to publish widely on many aspects of cartography. To my immense relief, she soon demonstrated that Donnelley Cartographic Services were ideally, perhaps uniquely, qualified to serve as the cartographic partner; time was to prove her right. Had I but known it then, I had unwittingly fulfilled Cole Harris' recommendation stemming from his experience with the HAC: "I suspect this is a rule-of-thumb for most atlases: find, then rely on, one outstanding cartographic designer."¹⁹ What I had found, to be sure, was a team rather than the HAC's individual (Geoff Matthews). Thankfully, despite the company's successive changes of ownership and office removals between 1988 and 2000,²⁰ the team personnel were to remain very stable throughout. After Barbara Petchenik's premature death in 1992, Keith Winters took over the management of the account until completion of the project. There was a succession of no more than three cartographic managers – Jeannine Schonta to 1993, Janet Kelly to 1998, and thereafter David Stong.²¹

From the outset I wanted the role of Donnelley's team to be far more than a merely subordinate one. Donnelley, after all, could contribute vital cartographic knowledge, experience and perspective that I as a historian and academic lacked. My impression of TIR, TIB and TAVO maps was that their cartographers either lacked talent or (more probably) that the scholars in charge had not offered them adequate opportunity to contribute their expertise. By contrast, I was eager to invite recommendations from Donnelley.²² There were many fundamental issues to discuss.

Scale and landscape

Scale was perhaps the most basic of them. In the expectation that many users of the atlas would not be expert map-readers, there was good reason to keep the number of scales employed to a minimum, ideally perhaps to no more than one. Without doubt, a conspicuous merit of the TIR and TIB series was their adoption of a uniform scale – a marked advance on the nineteenth century classical atlases, which had never done likewise. The disappointment, however, was that both choices were so modest – 1:1,000,000 in the case of TIR, and 1:800,000 in that of TIB. By the end of the 1980s, scales as small as these simply could not do justice to our accumulated knowledge of many of the more populated and well explored regions of the Greek and Roman world. For these in particular, some more generous scale was essential. At the same time,

however, the larger this scale was, the more space it would require, and the correspondingly less justifiable it might prove for thinly populated or little explored regions.

A minimum of two scales seemed unavoidable, therefore. What each should be depended in turn upon how the rendering of physical landscape was to be generated. It would be necessary to start from today's landscape, but whether to rest content there, or to attempt to restore it to its ancient aspect where sufficient data for the purpose survives, was a further fundamental concern. Earlier approaches had differed. When TIR was initiated at the end of the 1920s, the question of restoring the modern physical landscape back to its ancient aspect was seemingly not even raised. Nor was modern landscape created afresh for TIR maps. Instead, Crawford devised a brilliantly simple and economical scheme whereby the layout of TIR would replicate that of the (then new and ongoing) International Map of the World (IMW, 1:1,000,000). The elements created in the compilation of each IMW sheet would simply be reused for TIR, "except that for the black detail plate is substituted a black archaeological plate, and the red road plate is omitted altogether."²³ By the 1960s, when TIB was initiated, there was keener awareness of the need to allow for landscape change over the centuries, but at the same time this project was particularly concerned to enable the users of its maps to relate Byzantine features to their modern setting. Hence the first stage in the preparation of each TIB sheet is the creation of a new map of the relevant area today at 1:800,000, incorporating modern place-names and even such features as highways, railroads and airports. Purchasers of TIB receive two versions of this map: one, exclusively modern as described, printed in clear inks; the other reproduced as a subdued background in pale inks, over which are printed Byzantine names, features and road linework.

My view was that the *Barrington Atlas* should endeavor to show the ancient landscape so far as possible, not the modern, and this attempt was undertaken. The fact is that a high proportion of identifiable manmade landscape changes postdate World War II, and are not so difficult to adjust for. Even the most extensive area affected thus – now covered by Lake Nasser in southern Egypt (see Map 81) – could be redrawn from earlier maps. Where nature has changed the landscape, and over a much longer span, the attempt to restore its ancient aspect must inevitably often prove more delicate and problematic. In extreme cases we can only acknowledge that, while we know the ancient landscape of an area to have differed markedly from today's, sufficient data with which to restore it no longer exist; in these instances, more of today's landscape must perforce be left in place than would otherwise be justified. The Nile Delta, for example, offers an acute illustration of this problem.²⁴ It is true that where extensive restoration of a familiar landscape has been possible, certain users of

the atlas are liable to be disoriented by the result. Lovers of Venice have complained to me about its ‘disappearance’ from Map 40, and Spaniards living north of Cadiz have taken me to task for rendering where they live today as open water on Map 26. Such upsets are to be regretted, but they can hardly justify abandonment of the attempt to set ancient cultural data so far as possible within the ancient physical landscape. To place these data against the modern landscape instead – as do TIB and the latest editions of the Ordnance Survey *Roman Britain* map,²⁵ for example – was in my view not an approach to imitate. Time and again, after all, ancient writers’ geographical references are meaningful only in relation to the ancient landscape, and if we seriously wish to engage with any past civilization we should strive to do so within their landscape, not ours, however unfamiliar it may appear.

Base materials

No less undesirable and unnecessary a model, it seemed, was TIB’s costly and time-consuming practice of commissioning the creation of entire new landscape bases. Rather, it would be better to follow TIR’s example and identify appropriate modern map series from which the required physical landscape elements could be adapted. This search, however, turned out to be prolonged and frustrating. National map series in all their variety were far from serviceable. Instead, whatever series were to be adopted had to relate satisfactorily to one another, to offer uniform presentation across modern national boundaries, and to be the product of makers willing to supply elements for reuse in the *Barrington Atlas*. For many reasons the IMW series originally adopted by TIR, and its corresponding “1404” series at 1:500,000, were not suitable. Neither series was still in production at the end of the 1980s, and elements in good condition could no longer be obtained. Other practical obstacles were, first, the inconsistency produced by conversion of the contour-interval figures on some sheets, but not all, from feet to metres. Second, the series sheet-size, while far from immense, was still too unwieldy a format for the atlas volume I had mind. In addition, the series sheet-lines had an unfortunate knack of dividing areas that ought at all costs to appear entire on any historical map: south-east England, for example, was split between four sheets, and the islands of Sardinia, Euboea and Crete were all bisected. Altogether, there was no means here to create a satisfactory group of geographically and culturally meaningful map bases without resorting to the expensive and awkward expedient of making almost every base a ‘mosaic’ of

two or more IMW sheets.

Gradually it became clear that the required transnational uniformity could in fact only be furnished by Soviet or U.S. world map series. For all the high quality of much of the Soviet mapping, from a practical point of view the end of 1980s was no time to start relying upon this source of base materials. U.S. series, by contrast, had much to recommend them. In particular, the (then) Defense Mapping Agency's Operational Navigation Chart (1:1,000,000) and corresponding Tactical Pilotage Chart (1:500,000) series both offered all but complete coverage of the entire span to be covered by the atlas.²⁶ Although in the case of both series some of the sheets required are produced by the British Directorate-General of Military Survey, these adhere to U.S. specifications, so that uniformity is maintained. Thus, among other vital concerns, style of presentation is consistent, all contour intervals are in feet,²⁷ and the same orientation (North) and projection (Lambert Conformal Conic) are adopted.

Moreover, sheets of both these DMA world series – and two related ones at the smaller scales of 1:2,000,000 (Jet Navigation Chart) and 1:5,000,000 (Global Navigation and Planning Chart) – circulate widely (and cheaply) and are not protected by any copyright. If they were to form the basis for a restoration of the modern physical landscape back to its ancient aspect, users of the atlas wishing to make a direct comparison between ancient and modern for any region should find it relatively easy to acquire the relevant DMA sheet for the purpose: see [Plate 13.5](#) for an illustration. Most important of all, even the individual elements comprising any DMA sheet at 1:500,000 scale or smaller were in the public domain and available for purchase and reuse. This remarkable openness did not extend to any scale larger than 1:500,000, however. In particular, for some countries the actual printed sheets of the 1:250,000 series (Joint Operations Graphics; also oriented North, with Lambert Conformal Conic projection) remained classified, and hopes of obtaining any elements at this scale would be quite unrealistic.

So it emerged that the one practical way forward was to rely principally upon the ONC and TPC series for the provision of map bases. At the point when I took the decision to do this, there remained a single identifiable major drawback, although another gradually revealed itself. The former was that the ONC series incorporates only the most rudimentary elevation tinting. For consistent presentation within the atlas, it was highly desirable that all the maps with this base have such tinting added to match the TPC series style of presentation. However, to make that enhancement by means of the film-based technology then in use (peeling, creating 'open windows', etc.) would without doubt prove exceptionally laborious and costly; yet it was at least feasible, and had to be budgeted for. There was the prospect that the Digital Chart of the World (the first digitized version of the ONC series) might be released before

this enhancement actually needed to be made, and in all likelihood its use could then simplify the task. In the event, it did prove possible to tap the DCW for the purpose, but that was far from predictable at the end of the 1980s.

The unanticipated drawback was the sluggish, uneven pace at which the DMA turned out to deliver the elements ordered. To be sure, the amount of material was large (forty-one sets of elements),²⁸ and in a military agency priority was rightly given to fulfillment of military needs. Even so, the delays became sufficiently extreme to make me fear that the progress of the project would be jeopardized. That it was not is due above all to the consummate diplomacy of Luis Freile at Donnelley, who ultimately was able to secure the full complement of elements ordered. Release of the final set caused extraordinary difficulty because it fell just after the date (October 1, 1996) on which the DMA became the National Imagery and Mapping Agency. NIMA from its inception was not authorized to fulfill any civilian requests for purchase of elements. So altogether, in retrospect, there is reason to feel hugely relieved at the fortuitous timing of the request for these vital materials that underpin the atlas. Frankly, I doubt if it would have been practical for the project – in the form I had conceived it – to proceed without them or (perhaps an even more frustrating plight in practice) with only some, but not others.

Coverage, layout, timespan

For laying out the atlas, the sheer immensity of the ONC and TPC sheets (normally 37 ins. tall by 50 wide) seemed a further advantage insofar as it might help to limit the frequency with which mosaicing was required. I deliberately sought to keep this to a minimum, and in the end relatively few maps at 1:1,000,000 or 1:500,000 had to be mosaiced; of those that are, only a handful call for the more delicate north-south joins.²⁹

Even so, establishment of the atlas layout on the basis of ONC and TPC sheets meant reconciling a perplexing array of ideals, principles and limitations (Figures 12.1 and 12.2 and Plate 12.1). The map sizes were of course immutably fixed. I strove for ‘horizontal’ doublespreads where possible, but was also ready to resort to ‘horizontal’ single pages, and even to ‘vertical’ single and double turnpages (with North to the left) where they seemed the most effective layout. To save space and contain costs, I determined to omit open water beyond what was needed of it to complete a mainland map; this could not be an atlas where coverage of the sea would match that of the land. Equally in this regard, I embraced Donnelley’s principles that the maps must

be of uniform sizes and that each must extend to fill the size of frame permitted by the volume's format. Otherwise there was to be no variation or reduction in shape and size, and none was made except in the special case of Map 1a (Plate 12.2). At the same time, where land covered by the atlas continues beyond the edge of a map, overlap – however minimal – must be incorporated between the first map and the next (sometimes more than one) to assist users in following the continuation.

Establishment of the layout naturally demanded that the scope of the atlas be defined. There was no question, for example, that mainland Britain should be shown, likewise North Africa for some distance south of the Straits of Gibraltar, as well as the Persian Gulf, Sri Lanka, and the Indian sub-continent at least as far as the Ganges mouth. But whether these limits extended far enough was debatable. Ptolemy's *Geography*, for example, certainly lists places further east than the Ganges, as well as down the east coast of Africa possibly even as far as Madagascar. Equally, we possess an account (if it is not

Figures 12.1 and 12.2 The locator outline map at successive stages of the project's development – in 1990 (Figure 12.1), in 1994 (Figure 12.2), and in the published atlas, 2000 (Plate 12.1). While the framework of the initial layout is maintained throughout, after 1990 many part-maps and insets become better integrated (such as 26 a and b, and the insets between 30 and 31, in Figure 12.1), and excessive overlaps eliminated (in eastern Asia Minor, for example). More overviews at 1:5,000,000 are added, and eventually coverage at 1:1,000,000 is extended so that the map planned from the outset to show Greek settlement in Bactria (85 in Figure 12.1, 94 in Figure 12.2) no longer remains an isolated one at this scale.

fiction) of a long voyage down the west coast of Africa. My eventual conclusion was that the effort of attempting to extend so far in these various directions would not be reflected in the amount of data that could be marked here with any confidence. I did, however, accept the recommendation made at a later stage by Prof. A. Bursche that the southern Baltic region be added because it is archaeologically well documented, especially in respect to its trade in amber with the Roman empire; hence the addition of what became Map 2. Also at a later stage I should have liked to extend coverage for some distance both westwards and eastwards of Map 36 in Libya, but was unable to devise any means of doing so economically, even by resorting to a smaller scale.³⁰

Even with the limits just described, the extremities of the coverage were very far flung. To show them at 1:1,000,000 scale would occupy a formidable amount of space, and once again – in the present state of our knowledge – the effort (and expense) would seldom be justified. Consequently, I decided that 1:5,000,000 would have to suffice for these extensive 'remote' areas, and I also

maintained coverage at this scale to create overview maps of almost everywhere shown at a larger scale. Once Map 2 had been added in,³¹ there were twelve pages in all at this scale³² (Plate 12.3).

Naturally enough, all areas settled or controlled by Greeks or Romans should be shown at no less than 1:1,000,000. Acute difficulty arose in determining which parts of this expanse merited showing four times larger at 1:500,000. I would maintain that the parts chosen are broadly speaking the right ones – southern France, Italy, North Africa to the west and south of Carthage, Greece and the Aegean, the Straits of Kertch, much of Asia Minor and the Mediterranean's eastern seaboard, and the Nile valley. This said, the constraints imposed by the layout and by the need to mesh two map base series make some unevenness unavoidable. Parts of central Asia Minor, for example, or of the Egyptian desert, could justifiably be reduced to 1:1,000,000. By the same token, much of southern Spain ought ideally to have been shown at the larger scale, but it simply proved impossible to incorporate the necessary shift of scale at all tidily into the layout here. The Aegean Sea, by contrast, presented the opposite problem. It could and should be shown at 1:500,000, but the page-size made it impossible to do this neatly; hence the resort to substantial insets for the islands in the center and south-east (all on Map 60). Moreover an overview was vital, and one could only be devised at 1:1,000,000, with considerable ingenuity at that; hence the exceptional number of bleeds off this 'turned' doublespread (Map 57).

I was keenly aware that three areas in particular – the environs of Athens, Rome and Constantinople – merited showing at considerably larger than 1:500,000. Ideally, DMA's 1:250,000 scale Joint Operations Graphics series seemed the obvious recourse for a base in these instances, and with varying degrees of difficulty it was eventually possible to secure the relevant sheets (one in the case of Rome, two for Constantinople, and as many as four for Athens). The only way to create elements from these, however, was for Janet Kelly at Donnelley to trace each required landscape feature separately in turn from the printed material. In the course of this painstaking labor she also accomplished the necessary complex mosaicing in the cases of Constantinople and Athens, and then enlarged the scale of all three maps by 166.7% to bring it to 1:150,000. By this ingenious means doublespread bases were created for the environs of Athens and Rome, and a single page for those of Constantinople.

Altogether, therefore, this layout for the atlas came to use as many as four different scales, although each may be related to the others with comparative ease, and two (1:5,000,000 and 1:150,000) are only used minimally. In fact all but nine of the ninety-nine maps are at either 1:1,000,000 (forty-seven of them) or 1:500,000 (forty-three of them); every map's scale is stated clearly alongside its title (printed twice for doublespreads), and the scale is naturally reflected by

the scalebar placed at the bottom of each map or alongside it.

How then to arrange the ninety-nine in order presented an intriguing challenge when in principle there are so many possibilities. It seemed logical to proceed, broadly speaking, west-east and north-south. However, to develop a satisfying sequence of so large a mix of sixty-six doublespreads and twenty-four single pages without any breaks proved downright impossible, and perhaps it would be undesirable in any case. The most attractive expedient was to place all six overview maps (1:5,000,000 scale) first, and then to create six loose regional groupings each prefaced by a diagram sketch of the region on a righthand page; the corresponding lefthand page can either remain blank, or be used for a final (single page) map in the preceding grouping, if required (as with 48 and 99). Undeniably, the regional groupings are somewhat arbitrary, but their creation does facilitate a rational ordering of the maps and serves to make the atlas less overwhelming to users.

I hardly need to repeat that there was much other mapping of the Greek and Roman world which in principle could have been undertaken for the atlas. I am as regretful as anyone at having excluded it. The only maps I was willing to incorporate in addition to the ninety-nine already mentioned were three outlines at 1:10,000,000 (two doublespreads and one single page) which sketch the boundaries of Roman provinces at three successive stages of the Roman empire's growth and decline. These apart, my view was that the ninety-nine maps, spread over 175 folio pages, comprised a cohesive set which supplied an essential basis – otherwise missing to date – for further mapping initiatives of all kinds. Moreover it was starkly clear from the outset that the successful completion and publication of this set alone was a hugely ambitious goal, fraught with the risk of failure. Dozens of expert scholars would need to be recruited for compilation of the maps, and thereafter encouraged to deliver the work they had committed to in timely fashion. The amount of editing, checking, adjusting, proofreading and associated tasks would be colossal. Map production costs were well-nigh impossible to gauge, although it was obvious that they might easily run to a couple of million dollars or more. Meantime the prospects for securing the necessary funding support were hazy.

In these circumstances, to commit to further mapping would have been irresponsible, not to say suicidal. I should dearly have liked to commission a series of city-plans at very large scales, since these are in principle feasible and without doubt badly needed, but the scope and nature of such a different type of mapping initiative would have been too much to accommodate.³³ Equally, the limitless potential range and variety of possible thematic maps – another distinctly different type of mapping – cast serious doubt on whether an acceptable and appropriate selection could be made.³⁴

I had resolved that the timespan encompassed by the atlas should be from

the end of the Bronze Age (therefore no earlier than 1000 B.C. approximately) to the emergence of Islam in mid-seventh century A.D. The exclusion of the Bronze Age was a bitter disappointment to some, but data relating to it would not integrate well onto maps that had to cater for a further millennium and a half in addition. My own deeper disappointment was that it was not practical to offer even, say, two successive maps of each region so as to furnish a sharper sense of the physical and cultural change that occurred over time, very strikingly in some instances. Even to double the map pages at the two standard scales, however, would have brought their total alone to 312, and the extra burdens imposed at every stage in the volume's production (not to mention its marketing at an affordable price) would have been crushing. At least there was one modest indicator of change that could practicably be introduced to the maps. This was a range of five distinctive colors for five successive periods – Archaic, Classical, Hellenistic, Roman, Late Antique – within the full timespan of the atlas. Accordingly, names and features which occur in only one of the five are marked out in the relevant color. The possibility of extending this indicator to accommodate two or more periods was considered but rejected. The potential variants were too many, the color palette would soon be over-taxed,³⁵ and many users were likely to be left bewildered. For such enquiries, it would be better that they consult instead the Directory which each expert map compiler was instructed to prepare for every name and feature marked on the map base. Among the data in each concise Directory entry³⁶ is a record of which among the five periods the name or feature is attested for.

Map compilation

By mid-1989 the fundamentals were in place: my vision for the scope and nature of the atlas was in broad measure determined, along with its base materials and a layout. The next vital step had to be the compilation, design and production of a specimen map. Funding applications would hardly be competitive without such tangible testimony that the broader vision could be implemented effectively. At the same time the exercise would resolve a great array of design issues; it would also clarify in detail what the regional experts who compiled the maps needed to supply to Donnelley's team, and in what format. For this purpose, Clive Foss (then at the University of Massachusetts, Boston) courageously volunteered to undertake the compilation of the 1:500,000 scale doublespread that appears (revised) in the published atlas as Map 52 *Byzantium*. Jeannine Schonta at Donnelley designed it with sensitivity

and insight. It was completed along with a key, then printed by Meriden Stinehour, Lunenburg, Vermont, and delivered just in time to accompany the first major funding application made by the project, to the National Endowment for the Humanities, on September 1, 1990 ([Plate 12.4](#)).

The funding awarded in mid-1991 as the result of that application made it possible for APA to issue contracts to the expert map compilers,³⁷ for base materials to be ordered, and for a project office to be set up in Chapel Hill, NC.³⁸ Without question, the inspiring impression created by the specimen map played a decisive role in launching work on the atlas proper. In addition, as anticipated, the making of this map provided sharp lessons for refining the relationship between compiler, editor and cartographic team. The two former both had to recognize that the team would not presume to contribute in any way to the map's content; rather, it would just reproduce precisely and exclusively whatever was supplied to it through the editor. I applaud this as a sound and practical form of working relationship, but adjustment to it inevitably took practice. So, if the linework drawn for a road by the compiler was meant to continue until it touched a settlement symbol, but actually stopped a little short on the herculene (frosted mylar overlay) supplied to Donnelley, then on the proof it would duly stop short. Consequently, as editor, I soon gained respect for cartographers' unwavering attention to accurate detail of every kind, and grasped the need to convey this to my unsuspecting fellow scholar-compilers.

It must be appreciated that few of these eighty and more scholars had ever compiled a definitive map before, so that it was imperative to furnish them with full, precise instructions for every aspect of how they were expected to proceed – in particular, which type of data was to be marked on each of the eight pin-registered herculenes (on the correct, frosted side!), and with which color pencil, when superimposed on the four or more physical landscape elements (film positives) comprising a map's base.³⁹ Equally important was the compiler's organization of a potential sheaf of type lists, which had to accommodate, for example, five possible sizes for settlement names, as well as single-period colors and other variants. Discrepancies between a compiler's overlays and type lists (and Directory entries too) always had to be of concern to the map editor in the project office.

It was no surprise that the need to accustom so many experts to the novel requirements of mapmaking turned out to be laborious and sometimes inefficient, but the best knowledge of the classical world's many different regions could only be tapped in this way. In addition, spreading the work so widely acted to limit the damage liable to be inflicted by compilers who sooner or later defaulted on their commitment, or proved unable to furnish materials of acceptable standard. As it turned out, instances of both types of

embarrassment did occur, but thankfully in small numbers and early enough to remedy. Over the years I organized several group meetings of compilers on both sides of the Atlantic to demonstrate techniques and discuss problems; these occasions were invaluable for identifying difficulties and overcoming them.

More generally, there is no question that completion of the atlas was speeded by the unprecedented ease of communication that the 1990s offered – not only telephone and express courier services, but also fax, email and ‘floppy disks.’⁴⁰ Even so, it remained a constant cause of concern that original herculenes marked up by compilers would be lost through theft, fire or other damage. To xerox them was impractical. Despite the expense, the only recourse was for Donnelley to reproduce them photographically as plastic positives. As a vital precaution, this was always done without delay; thereafter no set of original herculenes and all the copies made of it were ever kept in the same building overnight. So when a set of original herculenes later undergoing independent evaluation was left inadvertently in a Paris telephone box and never recovered, it proved possible to rely instead on the plastic copies that had been made. Throughout the project, as it turned out, loss of materials, or damage to them, were miraculously slight.

In practice, compilers’ submissions varied in the degree to which they fulfilled every requirement in the instructions. This was hardly remarkable, however, given that the instructions grew to fill twenty pages single-spaced, and that it is typical for hundreds of names in different categories and sizes to be marked on a single map, quite apart from linework that often included complex deletions and additions called for by landscape changes. Most slips and inconsistencies in type lists were readily enough caught by the map editor and her assistants in the course of the extensive checking to which all material was subjected on arrival. Imprecisely or incompletely drawn linework posed tougher challenges, however, and many herculenes were redrawn before being forwarded to Donnelley.

Several compilers chafed at not being permitted to mark categories of data to which they attached importance for their areas, but which I had determined (reluctantly in some instances) that the atlas should exclude throughout. Even so, extreme frustration with compilers’ departure from the instructions was rare, because most had the prudence to consult the project office before proceeding too far. Just one compiler, fortunately, was cavalier enough first to set aside the map base supplied and then to mark a great quantity of data on a different base instead (albeit at the same scale); only at a very advanced stage did this scholar contact the project office with a complaint that the two bases would not match. It is true that another compiler had been intending to mark all his data on bases of his own at 1:250,000 before transferring it to the base

supplied at 1:500,000; but mercifully he articulated this intention before proceeding with it. A third compiler insisted that every site marked on maps for his area at 1:50,000 must be shown on the one he was preparing for the atlas at 1:500,000. Repeated warnings that he would need to be more selective for the latter scale did not deter him until his draft compilation for the atlas had all but disappeared under a blizzard of point symbols; he then finally acknowledged the need to begin all over again with a different approach.⁴¹

The overlap between maps where land coverage continues did more to hamper map production than anticipated. At the planning stage, it seemed essential to assist users of the atlas by incorporating it, and I remain convinced of its value. Even so, a stream of difficulties arose in implementing it. Ideally, production of any map requiring overlap at the same or a greater scale on any side should not begin until the compilations for all those adjacent maps are ready for production too. In practice, of course, it was impossible to wait so long in every case; to pay project office staff to do nothing for a period would be counterproductive, and if Donnelley's experienced team were to be sent no work, then they would be dispersed and assigned elsewhere. In some instances, predictably, an overlap area was slim and the amount of work it demanded minimal; the same compiler might even be responsible for one or more of the adjacent maps. After due consultation, therefore, it could seem safe enough to authorize production without having yet received all the adjacent compilations.

Much had to depend on how closely compilers adhered to the dates by which they had initially agreed to submit their work. Broadly speaking, the plan was to produce the larger-scale (1:500,000) maps in a first phase (1993–95), followed by a second one (1995–97) for the maps at 1:1,000,000. In practice, as was only to be expected, frequent adjustment was called for as time went on because compilers delivered late, and in a few instances very late.⁴² Such delays could be compounded in the case of maps where the compilation had to be divided between two or more scholars – typically along modern national boundaries, because survey, exploration and publication of their results are organized thus. So Map 89, for example, called for scholars with expertise on Turkey, Syria, Iraq and Iran all to co-ordinate and deliver their work, even before the matter of this map's overlap with several others could be addressed. In a few instances the compilers of adjacent overlapping maps were actually unable to agree on what should be marked in the area they shared, so for the sake of maintaining consistency it then fell to me to make the final determination. Such disagreements aside, it was often a severe trial for both the project office and Donnelley to ensure that consistency was maintained in an overlap, especially if more than two maps were involved (as at the conjunction of Maps 24, 25, 26 and 27, for instance), and if there were linework

continuations.

The case of Maps 44 and 45 was the most exacting one in almost all respects, not because the compilers disagreed (on the contrary, they collaborated well), but simply because the overlap area here is so extensive and ‘busy’. Had I been more wary of the potential pitfall, I might have striven harder to reduce this overlap when creating the atlas layout. The likely obstacle then, however, would have been the perennial difficulty of accommodating the Italian peninsula deftly to maps oriented north. In the project’s second phase of map production, digitization did prove to be of special value for ensuring speedily and efficiently that overlap coverage matched; but it could help only at the smaller scales,⁴³ and not therefore between 44 and 45, let alone between 43 and 44.

Timing

More than one observer has reflected that the project to create the *Barrington Atlas* was unfortunate in its timing.⁴⁴ Had its launch been delayed by only a few years, the suggestion goes, the atlas could have been fully digital and therefore immediately more versatile. The sentiment is well-intentioned, but I am not fully persuaded by it. It is true that the atlas is an extraordinary, not to say unique, hybrid: the three maps at 1:150,000, and all but three of those at 1:500,000, were produced by the traditional film-based method, and the remainder were produced digitally.⁴⁵ This second, larger group – approaching 60 per cent of the atlas maps – is impressive testimony to Donnelley’s skill in exploiting successive advances in technology from the early 1990s onwards, when the Digital Chart of the World was first released, and when I resolved that all production of the smaller-scale maps for the atlas should be digital from the outset. That novel production method, however,⁴⁶ did not

alter the established means by which the expert compilers would assemble their data and mark it on herculean superimposed on film-positive bases. Any notion that they might have made this mark-up electronically direct onto a monitor, I might add, is sheer futuristic fantasy. Even had it been practical to supply materials by this means, at that time few of these scholars worldwide had the capacity or the equipment to manipulate them in this medium.

In addition, from the project’s short-term perspective, the hard fact was that digital production increased costs substantially rather than lowering them. The first edition of the Digital Chart of the World turned out to fall far short of its printed counterpart in quality of coverage. In part, this stemmed from

conscious decisions, such as to omit all contours below 1,000 ft., for example; accordingly, Donnelley added in the 500 and 250 ft. contours.⁴⁷ But there were also countless instances where the scanning of the linework for physical landscape had been done with poor attention to detail (by accident or design, the rendering of Libya was especially defective, for instance), and the extra cost for Donnelley to bring it up to the standard of the printed ONC sheets was considerable.

Over time, it is true, digital production justified the initial high outlay, and it will continue to do so. At each proof stage (most maps were permitted two, and no more), correction and adjustment of film-based materials were unavoidably expensive by comparison, in particular the second round when multiple elements might have to be re-shot in order to accommodate minimal changes. In a few instances therefore, on cost grounds, I forbore to make small changes in second proof that were not vital, although they would have been desirable.⁴⁸

In retrospect, it is the failure of APA's first atlas project to achieve anything that I would single out as the most fortuitous twist of fate. Had it proceeded from its inception in the early 1980s at approximately the same pace as its successor, the results would have been published in the early 1990s with the same outward appearance, but as an exclusively film-based production comprising materials that offered no potential for further exploitation. Whether the successor project should have waited before proceeding, I am far from sure. Perfect timing for any project is hard to achieve. In this case the need for the atlas envisaged was patent, and already long unfulfilled. No-one could predict how swiftly and how usefully digital technology would advance; in the late 1980s, it should be remembered, even fax and email were still emerging novelties to most scholars. Fortunately, all work for the *Map-by-Map Directory* could be computerized from the start, and so was able to proceed much faster and more efficiently (in the final stages especially) than would ever have been possible by use of the old conventional means.

A wait at the end of the 1980s – for how long in the first instance? – might only have led to further postponements as the technology of mapmaking turned out to experience dramatic, rapid change throughout the 1990s. My hunch is that, the longer the wait, the tougher it would have been to decide what to attempt. The new technology opened up an exciting, but also bewildering, array of possibilities, and that prospect could easily have encouraged prematurely ambitious plans.⁴⁹ At the risk of sounding over-cautious, I would claim that the plans for the atlas turned out to gain far more from the 1990s revolution in mapping technology than they lost. The need to rely exclusively on established conventional methods when the plans were made at the end of the 1980s discouraged any attempt to do more than lay the

comprehensive foundation which was so badly lacking. This was labor enough in view of the immensity of the classical world and the complete lack of maps of many of its regions as they were in antiquity; here, the arduous pioneer work of gathering, assessing and synthesizing the mass of relevant data still had to be undertaken from scratch. The good fortune was that, as the 1990s advanced and digital technology developed, it could be harnessed to achieving the project's goals. As a result, the atlas is truly a transitional product. It achieved publication less than a year later than originally envisaged (in 2000, rather than 1999, minimal delay for a project of this size and complexity),⁵⁰ and it now forms the springboard for initiatives never even dreamed of at the outset.⁵¹

Future prospects

Hard though it is to believe today, everyone at the initial stage, in the late 1980s, regarded the atlas as an 'end', the definitive provision of a vital missing tool. Nobody foresaw then that, even before achieving publication, the atlas would appear rather to be only a beginning which opens the way to further mapping of many kinds. The University of North Carolina, Chapel Hill, merits gratitude for recognizing this potential by sponsoring the launch of an Ancient World Mapping Center to exploit it.⁵² Bringing all the *Barrington Atlas* maps into a fully georeferenced format is one of the Center's early priorities, now well on its way to realization. Moreover, in place of the single map to cover all periods within the timespan of the atlas, preparation of up to five successive 'period' versions now becomes a practical proposition in each case, with use of the 'period of occupation' data already assembled for each map's Directory. Maps can be updated, too, as well as adapted and reissued in alternative formats; the range of possibilities is extraordinary.⁵³

It is the technological revolution that transformed cartography during the 1990s which has given the achievement of the *Barrington Atlas* such unanticipated lasting value. Holdsworth's wry comment that "perhaps the ultimate power statement in historical geography is revisionism that allows no subsequent revision due to prohibitive cost"⁵⁴ no longer holds good. The *Barrington Atlas* as published in 2000 will remain as a fixed foundation, but hereafter every component of it and its accompanying Directory stands ready to accommodate change as required. This is truly a more rewarding outcome than could ever have been sought for all the effort that went into the making of the atlas, especially when (in my estimation) the foundation laid was the

right one regardless of technology.⁵⁵ Remembering how grim the outlook appeared at the start, not to mention the hazards of every kind encountered along the way, it still seems to me a minor miracle that the exceptional collaborative effort to create the atlas succeeded. All the same, it was a close-run thing. I would be the last to dispute Dean's caution in the Foreword to the HAC volume 1: "No good atlas exists that did not cost more than was expected and take longer to produce than was projected."

Notes

- 1 R. J. A. Talbert (ed.), with *Map-by-Map Directory* (this latter both on CD-ROM and in two-volume printed format), Princeton and Oxford, 2000.
- 2 W. G. Dean (director), three vols., 1 (1987), 2 (1993), 3 (1990), Toronto.
- 3 J. Winearls (ed.), *Editing Early and Historical Atlases...* (Toronto, 1995).
- 4 For overview and discussion, see R. J. A. Talbert, 'Mapping the classical world: Major atlases and map series 1872–1990,' *Journal of Roman Archaeology* 5 (1992): 5–38.
- 5 R. S. Bagnall (ed.), *Research Tools for the Classics: The Report of the American Philological Association's Ad Hoc Committee on Basic Research Tools* (Chico, CA, 1980), 27.
- 6 Publication was by Dietrich Reimer, Berlin, 1894–1914. There has been one reprint – to which I contributed an Introduction – by Edizioni Quasar (Rome, 1996). See further L. Zöchner, *Antike Welten, Neue Regionen: Heinrich Kiepert 1818–1899* (Berlin, 1999).
- 7 On the production of this atlas, see further R. J. A. Talbert, 'Carl Müller (1813–1894), S. Jacobs, and the making of classical maps in Paris for John Murray,' *Imago Mundi* 46 (1994): 128–50. Subsequently, by happy accident, I rediscovered the engraved copper plates of these very maps in the vault of the John Bartholomew Co., Edinburgh; they now form part of the Bartholomew Archive in the Map Library of the National Library of Scotland.
- 8 Since 1957 its sponsor has been the Union Académique Internationale (www.uai-ua.org). For reports, see the annual *Compte Rendu* of that body (Projet VIa), in particular (among recent years) 1999 pp. 52–56.
- 9 Initially by Croom Helm. The current publisher is Routledge.
- 10 Winearls (note 3), 164 (italics are mine). Annual reports on the progress of APA's Classical Atlas Project were published in the Association's *Newsletter*.
- 11 Winearls (note 3), 137.
- 12 This atlas, published by Reichert, Wiesbaden, was begun in 1972 and completed in 1994: www.reichert-verlag.de offers full information.
- 13 This title for the work (which I use hereon) was eventually settled upon in recognition of the support furnished by the largest individual contributor to its funding, Robert B. Strassler; his family home is at Great Barrington, MA. A full list recognizing all contributors appears at the front of the volume. The necessity of ensuring that sufficient funds were always available to sustain map production on schedule without a break was a

- vital – and persistently nerve-wracking – dimension of the project not treated in this article. During the peak period of activity in the late 1990s, Donnelley's quarterly billings were in the region of \$250,000. The project's total costs were to exceed U.S. \$4.5 million, a massive sum by the standards of the humanities, but in fact low for all that was achieved.
- 14 Begun in 1966 under the sponsorship of the Österreichische Akademie der Wissenschaften and still actively in progress (www.oeaw.ac.at/tib/); note also the reports (most recently by J. Koder as Director) to successive meetings of the International Congress of Byzantine Studies.
 - 15 In 2000, when the atlas went to press, its printer Eurografica S.P.A., Vicenza, Italy, amply fulfilled expectations in this very demanding respect.
 - 16 Map 57, an overview of the Aegean, exploits this option to an exceptional extent in order to include places of importance. Many maps in the range from 64 down to 80 'bleed' extensively off their lower margins in order to permit less tight continuation of coverage from one map to the next.
 - 17 Winearls (note 3), 152–53.
 - 18 L. J. Cappon (ed.), Princeton, 1976.
 - 19 Winearls (note 3), 166; note Holdsworth's further comment on 188.
 - 20 Geosystems, 1994–98; MapQuest.com, Inc., thereafter. In order to avoid confusion, I refer to the team as "Donnelley" throughout the present discussion.
 - 21 For the members of Donnelley's cartographic team, see *Barrington Atlas*, xv. Donnelley's summary record of map production and all exchanges with myself and the project office from summer 1989 to spring 2000 comprises twenty-eight thick binders now held by the Ancient World Mapping Center at the University of North Carolina, Chapel Hill (see further below).
 - 22 Compare Dean's novel demand for the *Economic Atlas of Ontario* (Toronto, 1969): "Yet another most critical event with this atlas was justly placing the cartographer's name in the same type size on the title page alongside that of the editor. This was done over the vehement objections of the publisher accustomed to thinking of a cartographer in the same category as the illustrator of a book" (Winearls, 145). While I trust that the published *Barrington Atlas* duly offers its cartographers the prominence and praise they richly deserve, it remains the case perforce that much of their design work and their skilled adjustment and improvement of the map bases will never be identified as such by most users of the atlas, and hence unfortunately never appreciated for their full worth.
 - 23 *The International 1:1,000,000 Map Report for 1938* (Southampton), 6; see further *Journal of Roman Archaeology* 5 (1992): 19, cited above (note 4).
 - 24 See Map 74 and its accompanying text in the *Map-by-Map Directory*. In fact, all the great river deltas gave rise to comparable difficulty.
 - 25 Most recent in 2001 (1:625,000 scale).
 - 26 In some remote regions – parts of Libya, for example, on ONC H-3 and H-4 – physical landscape data was missing, and therefore had to be imported from other maps.
 - 27 To be sure, in the event of a choice, it might have been preferable to adopt metric measurements for the atlas; but there was no such choice. By the same token, to convert all figures and redraw all contour linework to metric intervals would have been grossly wasteful. A scalebar in both miles and kilometres accompanies each map, and there are

bars for the elevation tints likewise on the foldout Map Key page. Contour intervals are the only figures of measurement to appear on the maps; all spot-heights marked on the base series are removed.

- 28 A list of all map bases used appears in *Barrington Atlas*, xxix. As it turned out, no use was made of the JNC (1: 2,000,000) series.
- 29 Later into the project, the availability of DCW's large seamless 'tiles' permitted some advantageous adjustments which earlier it had been judged impractical to implement. Notably, the bottom margin of Map 86 (its upper part all open water) could now be dropped to extend well below ONC F-3's bottom sheet-line at latitude 40 00, greatly improving the continuation to Maps 62 and especially 63, both at 1:500,000.
- 30 Hence the arrows pointing to Gat, Zella and certain other oases situated beyond the scope of the atlas.
- 31 Fortunately the base it required was the GNC sheet already ordered for Map 1.
- 32 Map 1 uniquely comprises a doublespread with a foldout continuation equivalent to a third page so that the entire Mediterranean can appear on a single map. A few very isolated islands (Ustica, Aethusa, Lopadusa, for example) are only shown here because at larger scales much open water is omitted. I now realize that one such island group with an ancient name – Strophades, south of Zacynthus at lat. 37 15N, long. 21 00E – was inadvertently overlooked altogether.
- 33 Such maps might have been hoped for in R. Stillwell et al. (eds.), *The Princeton Encyclopedia of Classical Sites* (Princeton, 1976), but it offers none. Even the third edition of S. Hornblower and A. Spawforth (eds.), *Oxford Classical Dictionary* (Oxford, 1996) makes no apology for its complete lack of maps (see p. ix), and in fact seldom refers to any.
- 34 Range and variety are well illustrated by, for example, the *Atlas historique des cadastres d'Europe* series edited by M. Clavel-Lévêque et al. (Luxembourg, vol. 1, 1995; vol. 2, 2002), and L. Haselberger et al., *Mapping Augustan Rome* (Journal of Roman Archaeology Supplementary Series, No. 50, Portsmouth, RI, 2002), the latter a most welcome city-plan.
- 35 It could otherwise remain limited to five inks (and did) – the standard four (cyan, magenta, yellow, black) and a custom brown. Each further ink used increases costs, and complicates printing (note the slight misregistration of Late Antique orange in Map 67, which only surfaced on press, and could not be corrected). *Tabula Imperii Byzantini* maps – printed at government expense – incorporate a complex color-coding scheme for periodization.
- 36 Headings for each entry are: grid square; name as marked on the map; period(s) of occupation; modern name/ location; reference(s) to publication(s) where fuller information may be found.
- 37 Over seventy worldwide came to be engaged, grouped under ten further colleagues who served as regional supervisors ('vicars'); draft compilations were sent to almost 100 more experts for independent evaluation which proved invaluable. For names, see *Barrington Atlas*, xi and xiii–xiv respectively.
- 38 Susan Jenny began as project manager early in 1992 and continued in the post until summer 1999, when there was no longer the need for it. Two successive map editors each served for three years, Drs. Mary Downs (1993–96) and Joann McDaniel (1996–99). Altogether, for administration and editing the project benefited greatly from the kind of continuity in personnel that also served the HAC so well (Winearls, 157, 182).

- 39 For further details, see *Barrington Atlas*, xxvii.
- 40 HAC, with its far earlier start, was able to benefit much less in these ways, as Dean points out (Winearls, 157).
- 41 HAC, too, had to face the problem of contributors who were tempted to overload their maps (Winearls, 194 n. 3).
- 42 Two factors saved the overall production schedule from slipping behind, however: unexpectedly *early* delivery by some compilers, and (ironically) the sheer immensity of the project. Often the plan to move ahead next in one area had to be postponed, therefore, because a compilation or two were still missing; meantime, on the other hand, it had become possible to bring forward the work for another area.
- 43 In particular between Maps 1 and 3, for example; also 5 and 6.
- 44 Note, for example, S. E. Alcock et al., ‘Sitting down with the *Barrington Atlas*,’ *Journal of Roman Archaeology* 14 (2001): 454–61 at 461.
- 45 The three digital 1:500,000 maps (17, 47, 68) had all suffered severe delays of various kinds at the compilation stage, and were the last at this scale to go into production.
- 46 Its five phases are summarized in *Barrington Atlas*, xxvii–xxviii. Both to reduce the risk of error and to contain costs, all the scanning overlays for phase 3 were created by the map editor in the project office rather than by Donnelley. This placed an extra burden on her, as well as adding to a “veritable snowstorm of paper” (and herculean) in the cramped confines of the office, comparable to that generated by the HAC (to cite Dean’s phrase in Winearls, 157).
- 47 No 250 ft. contour was added to all or part of certain maps where the landscape hardly called for it. The omission is noted in the margin in each such instance; see, for example, Maps 9 and 86.
- 48 Hence, for example, on Map 62 D3 the underline for *Turkmen Baba* is not wholly orange as it should be.
- 49 Note Holdsworth’s cautions on the transition to computerized cartography (Winearls, 193). For HAC, this only began successfully in 1990, after three earlier attempts at computerization had all failed “because of excessive costs or inadequate technology or both” (Dean in Winearls, 149, 152). By then only volume two of the three in the set remained to be completed, and funds were perilously low. It was computerization that made completion possible, with fifty of this volume’s fifty-eight plates produced thus, all of them indistinguishable in appearance (as in the case of the *Barrington Atlas*) from those produced conventionally.
- 50 The original estimate that the first volume of the HAC could be delivered in three years proved “simply wrong” (Cole Harris in Winearls, 164).
- 51 A brief note on funding is in order before leaving the issue of timing. To raise the necessary support for the atlas was challenge enough during the 1990s; thereafter (as is now all too clear) the economic downturn is likely to have made it impossible, and the entire effort might well have foundered at an advanced stage.
- 52 I advocated such a center in ‘Maps for the classical world: Where do we go from here?’ *American Journal of Philology* 118 (1997): 323–27.
- 53 The Center’s activities and prospects are discussed in a chapter “Mapping the ancient world” contributed jointly by Tom Elliott, the current director, and myself to A. K.

Knowles (ed.), *Past Time: Past Place; GIS for History* (Redlands, CA, 2002), 145–62. For up-to-date information, visit www.unc.edu/awmc.

54 Winearls, 195 n. 14.

55 For comparable choice of goal by a project which began recently enough to use NIMA's VMAP0 (the 'successor' to DCW) as its base, note S. Parpola and M. Porter (eds.), *The Helsinki Atlas of the Near East in the Neo-Assyrian Period* (Chebeague Island, ME: Casco Bay Assyriological Institute, 2001).

Plate 12.1 The locator outline map for the Barrington Atlas in final form, as published (2000). Compare earlier versions of its development - in 1990 ([Figure 12.1](#)) and 1994 ([Figure 12.2](#)).

Plate 12.2 In order to extend coverage as far as ancient Cerne (off the coast of West Africa) and the Fortunate Islands, no more than an inset was designed initially, for placement in the lower-left desert area of Map 1. But despite its economy, such an arrangement - with an extensive expanse of open water seemingly deep inside the Sahara, as shown here - was felt to create too incongruous an impression. Instead, a separate Map 1a (also at 1:5,000,000) was created.

Plate 12.3 Part of Map 5 *India*, first in an early draft (above) incorporating only the physical elevation offered by the GNC-12 base sheet, and then as published in 2000 (below) incorporating custom-designed digital elevation modeling by Donnelley (with use of GTOPO30, as described in *Barrington Atlas*, xxviii) which was adopted for all twelve maps at the 1:5,000,000 scale.

Plate 12.4 Part of the specimen map at 1:500,000 as printed in 1990 (a revised version of which appears in the published atlas as 52 Byzantium). The colors developed to differentiate single-period features stand out distinctively. Note that physical elevations are enhanced by incorporation of the TPC series shaded relief element. However, its incorporation in the next map at this scale to go into production (54 Epirus-Acarmania) proved far less satisfactory, because in this more mountainous region it overwhelmed the elevation tints and single-period colors. Consequently, after much fruitless experimentation, the decision was taken to drop the use of the shaded relief element throughout.

Plate 13.1 Detail from Map 26 *Peloponnesus*, drawn by C. Müller and engraved by S. Jacobs and I. Dalmont, in W. Smith and G. Grove, eds., *An Atlas of Ancient Geography, Biblical and Classical* (Boston: Little, Brown and Co., 1874). Each map in William Smith's atlas was engraved onto a copper plate, printed, and then colored by hand. Its rendering of shaded relief, rivers, coastlines, site locations, and place-names represented the state of the art in Victorian cartography and classical studies. But the tremendous cost of the volume put it beyond the reach of most students and scholars, and the cost of making corrections or updating the volume were so prohibitive that a second edition was never published. For the entire map, see [Figure 3.3](#).

Plate 13.2 Landscape representation in the *Barrington Atlas*. This detail from Map 3 *Asia Occidentalis* shows the shaded relief, elevation tints, and place-names typical of the six *Barrington Atlas* maps at a scale of 1:5,000,000. Ancient Babylonia features here (divided today

between Iraq, Iran, Saudi Arabia, and Kuwait). Note also the Tigris and Euphrates rivers, the Caspian sea (upper right), the Persian gulf (lower right), and the Zagrus mountains. Many of the prominent sites from earlier cultures are not shown because there is no evidence that they were occupied or otherwise important during Greek or Roman times.

Plate 13.3 The Roman presence along the Danube in the *Barrington Atlas*. This detail from Map 23 *Tomis-Olbia-Chersonesos* shows the delta and lower reaches of the river (ancient Danuvius/Istros/Hister) where it empties into the Black Sea. Like other maps at the 1:1,000,000 scale in the atlas, this one provides complete coverage of sites, features, and names in a peripheral area of the Greek and Roman world. The lack of towns and roads as one moves north across the Danube indicates cultural differences in antiquity and the imbalance of scholarly research. The Danube formed a barrier to Roman expansion and a defensive shield for Roman settlements. Most of the fortified sites (black squares) along the road paralleling the river were founded in the Roman period.

Plate 13.4 Site certainty on the east coast of Sicily, as shown by *Barrington Atlas* Map 47 *Sicilia* (1:500,000). Sicily played an important role in the economy and politics of Greek and Roman civilization. Even this well-recorded and intensively studied place, however, has archaeological sites that scholars have not yet definitively matched to sites mentioned in ancient sources. There is no question about the location of Mount Etna (ancient Aetna Mons), but question marks indicate the uncertain assignment of names from ancient literature like Styella, Eubolia, and Dianae Fons to sites identified by archaeologists. Sites with no known ancient referent are labeled with their modern names, such as “Francavilla di Sicilia” just north of Mount Etna. Red underlining means a site was active only in the early Roman Empire.

Plate 13.5 Returning the Po river delta to its ancient appearance

(left) Detail from TPC F-2B (1:500,000), Defense Mapping Agency, 1968

(right) Detail from *Barrington Atlas* Map 40 *Patavium* (1:500,000)

These two maps show the same area of the Po river delta on the north-east coast of Italy, where siltation and floods have altered the coastline and coastal settlement patterns since antiquity. The modern coastline, river, and elevation data seen on the left form the base for the *Barrington Atlas* map on the right. This shows the region as it was configured between 1000 B.C. and A.D. 640, according to archaeological findings and geologic modeling. Dotted lines show aqueducts, solid and dashed lines mark roads. Grid patterns represent centuriation, a distinctively Roman division of land into a regular grid. Note the centuriated area between two branches of the “Padus/Eridanus” (Po river) just before they enter the “(H)Adriaticum/Superum Mare” (Adriatic Sea).

Plate 13.6 The Center of Empire. Detail from *Barrington Atlas* Map 43 *Latium Vetus*. This map of ancient Rome (Roma) and its immediate environs is one of three in the atlas at the scale of 1:150,000. Using a larger scale enables us to show the density of urban and suburban settlement, major and minor roads, and the complex network of aqueducts. Dashed lines

indicate roads whose paths can be determined only approximately. Among the other sites of historical interest are the tufa quarries, marked by a crossed pickax and sledgehammer and the letters “Tu”. Tufa was a sturdy, fire-resistant building stone. Gray fill (e.g., at Bovillae and Villa Domitiani in the lower right corner of the map) indicates the extent of built-up urban areas in major settlements.

Plate 13.7 Which Apollonia? Detail from *Barrington Atlas* Map 51 Thracia (1:500,000) and its *Map-By-Map Directory*. Pleiades will make available all the information contained in both the atlas and the directory. The map detail shown here includes two of the places called Apollonia in ancient Greece, one to the west of Amphipolis, the other to the east. The diamond symbol for the western Apollonia indicates that it was a road station. The eastern Apollonia, however, was a full-fl edged settlement, as indicated by the circular symbol. This is hollow because we cannot determine the precise location. The additional information provided by the directory, contained in callouts in the figure, shows that the western Apollonia was active in the classical, Hellenistic, Roman imperial, and Late periods (C, H, R, L following the name). The eastern Apollonia was occupied only in the classical period. Because Demosthenes was writing at the time of transition between the classical and Hellenistic periods, we cannot ascertain from the period information alone which Apollonia he was discussing. We will have to turn to the bibliography cited in the directory entry to learn that he was speaking of the city of Apollonia, not the road station. Pleiades will incorporate all this information, allowing users to quickly produce maps or select data that depicts only a particular period or a particular type of place. It will also permit users of the system to add bibliographic information as new work is published.

Mapping the Ancient World (co-authored with Tom Elliott) in A. K. Knowles, ed., *Past Time, Past Place: GIS for History* (Redlands, CA: ESRI Press, 2002, pp. 145–62)

Suppose that a student preparing a paper on the political and military activities of King Philip of Macedon comes across the following passage in a speech of Demosthenes, the famous Athenian orator:

Apparently those who inhabited Amphipolis, before Philip took it, were holding Athenian territory; but when he has taken it, it is no longer our territory, but his own, that he holds; and in the same way at Olynthus and Apollonia and Pallene he is in possession of his own property, not that of others.¹

Where would the student turn to find the location of these places and learn about their strategic importance in the fourth century B.C.? Upon consulting a gazetteer of the ancient world, the student might be surprised to learn that there was more than one place named Apollonia. Which one is Demosthenes talking about? Why does he bring it up at all?

Geographical questions would similarly confront a cultural historian studying the Roman conquest of the Po river valley in northeast Italy. A researcher who wanted to analyze how land was redistributed under the Romans and how that process affected the culture of the valley would want to conduct complex spatial analyses to examine temporal and spatial trends. But before any GIS work could begin, it would be necessary to consult literary and documentary sources, aerial photographs, and archaeological surveys. Deciding how to classify the ways the landscape was reorganized, identifying remnants of these patterns in the landscape, and dating them would require data that lies scattered in scores of archaeological investigations conducted

over many decades. All these tasks would be complicated by the scarcity of reference maps showing the location of ancient settlements in the region.

For most of the twentieth century, students of antiquity faced serious difficulties if their research interests were geographical. Although nineteenth-century scholars of Greek and Roman history used cartography, the increasing specialization and diversification of academic disciplines distanced ancient history from its spatial context. The one important exception is the field of archaeology, which developed as a discipline almost entirely since the publication of the last comprehensive atlas of the Greek and Roman world in 1874.²

Although various scholarly projects since 1900 have mapped particular aspects of ancient society, none collected and distilled enough of the century's considerable published findings to provide a comprehensive source of spatial data on Greek and Roman antiquity. By 1980, the need for such a geographical and historical resource had become so acute that a report on research tools for the classics, published by the American Philological Association (APA), cited cartography as "an area... where the state of our tools is utterly disastrous."³ It was from this public recognition of the problem that the APA's Classical Atlas Project was born. In 1988 the project was headquartered at the University of North Carolina in Chapel Hill under the direction of Richard Talbert.

In fall 2000, the project published the first comprehensive atlas of classical antiquity since William Smith's atlas of 1874 ([Plate 13.1](#)). The *Barrington Atlas of the Greek and Roman World*, issued by Princeton University Press, provides 102 full-color maps that show the physical and cultural world of the Greeks and Romans, from the British Isles to the Indian subcontinent and deep into North Africa (see [Plate 12.1](#) for the locator outline). The atlas documents more than twenty-five thousand named places and features spanning approximately 1000 B.C. to A.D. 640, together with many more unnamed ancient remains. This human geography is plotted on a landscape from which the effects of modern activity and climatic change, such as reservoirs and coastline shifts, have been removed. Twelve years in the making, at a cost of \$4.5 million, the atlas employed the services of approximately two hundred compilers, editors, researchers, reviewers, and cartographers, including scholars from universities, museums, and research institutes around the world. Cartographic services were provided by [MapQuest.com](#).

The atlas opens with six maps at a scale of 1:5,000,000 to orient readers to the regions that comprised the Greek and Roman world. Shaded relief and hypsometric color tinting (which marks changes in elevation) give a broad sense of the terrain of classical civilization ([Plate 13.2](#)).

The next ninety-three maps depict the ancient landscape in more detail, showing roads, fortifications, aqueducts, bridges, and other man-made

features. For the periphery of the Greek and Roman world, the scale of 1:1,000,000 is employed (Plate 13.3). A more generous scale of 1:500,000 is used for the Mediterranean core, and the largest scale – 1:150,000 – for the environs of Rome, Athens, and Constantinople, the greatest cities of classical antiquity. Finally, three overview maps depict the provincial boundaries of the Roman empire at different periods.

The atlas includes an alphabetical gazetteer of names and a fourteen-hundred-page Map-by-Map Directory on CD-ROM (also available in a two-volume print version). For each feature mapped in the atlas, the directory provides alternate ancient names and their modern equivalents, periods of occupation, and a bibliography. For each map, the directory also provides a compiler's introduction, pointing out characteristics of the map that call for special explanation. A good example comes from the introduction to Map 90, showing the southwest coast of the Caspian Sea, by S. E. Kroll:

Research in this region has always been hampered by national boundaries. Most of the area covered by the map belongs to Iran, but the northern parts belong to (former Soviet) Azerbaijan, to Armenia, and to the autonomous but disputed regions of Nakhichevan and Nagorno Karabakh. Apart from reports from travelers, no scientific research was undertaken in this part of Iran before 1945, nor has any comprehensive survey of ancient sites yet been carried out. As a result, many of the sites marked here have been discovered by chance, and not by intensive research. Because of the border situation, almost no topographic research has been possible in Armenia, northern Azerbaijan and the autonomous regions.⁴

Designing the maps and directories for the *Barrington Atlas* caused us to think carefully about how to represent historical knowledge in a geographic context. We wanted to organize and communicate detailed information consistently and unambiguously. We also wanted to represent the degree of certainty attached to the information, fine distinctions that are nonetheless critical to historical scholarship for any period because they can affect the nature and reliability of conclusions drawn from subsequent analysis. The symbols, line styles, area patterns, and typographic conventions employed on the maps reflect these concerns, providing information beyond that found in the gazetteer or the directory. For example, each category of site – settlement, monastery, lighthouse, bridge, mine – has its own point symbol. Different kinds of lines distinguish between roads, aqueducts, and canals. Solid lines and symbols indicate certainty about the location of a feature; hollow symbols and dashed lines indicate that what the map shows is only approximate. Both the maps and the directory employ typographical conventions to communicate

varying degrees of certainty about names ([Plate 13.4](#)): whether a particular feature known from archaeology should be equated with a particular name known from an ancient source; when a spelling error is suspected in a name provided by an ancient source; or when a name has been reconstructed. Names mentioned in ancient sources that are impossible to map even approximately are listed as unlocated toponyms in the directory. Users who consult the alphabetical gazetteer and the searchable directory on CD-ROM can be confident of finding virtually any geographic name they encounter in an ancient Greek or Roman work. The atlas then affords them the opportunity to assess the confidence with which that place or feature can now be located, and to see it in its setting on the map.

The *Barrington Atlas* is not a GIS, but as GIS technology developed and improved during the 1990s, the Atlas Project used it to produce about 60 percent of the maps. The first maps to be compiled (most of those at the 1:500,000 scale) were produced using the film-based method that had been standard since the 1920s. The cartographers at [MapQuest.com](#) used these techniques to prepare transparent film compilation bases, which were sent to the scholars who compiled the maps. They marked changes on transparent Mylar® overlays, which were then reviewed by atlas project editors and then returned to the cartographers for final proofing and production ([Plate 13.5](#)).

From 1994, however, maps were prepared using spatial data from the Digital Chart of the World (DCW), which was selected, projected, cropped, and printed on transparent film to prepare the compilation bases. To correct omissions and errors in the data, the cartographers edited it in a GIS using raster scans of the paper charts that were the basis for the DCW.⁵ As GIS became more central to the work of the atlas project, the team became more aware of the potential for new work that would use geospatial analysis and other data sources to build upon the compilation and organization efforts associated with the *Barrington Atlas*. Experience with GIS did, in fact, condition some final decisions about the organization of information in the directory and gazetteer. It also confirmed the value of the time and effort that had gone into the design and systematization of feature types and attribute data.

Although the Atlas Project was commissioned as a finite effort with a tangible conclusion in mind, namely the publication of a printed atlas, those involved came to recognize that publication ought also to represent the beginning of a renewed dialogue between historians, classicists, and geographers. This view crystallized as the project neared its end. The preface to the atlas announced the establishment at the University of North Carolina, Chapel Hill, of a permanent Ancient World Mapping Center to promote cartography and geographic information science as essential disciplines within

the field of ancient studies. Chief among the goals set for the Center were the creation of a digital atlas together with a georeferenced database of ancient geographical information. It is possible, therefore, to view the completed atlas as the first step in the creation of a historical GIS of the Greek and Roman world (Plate 13.6).

The Ancient World Mapping Center is heir to the collected data of the Atlas Project, which its staff has already begun to convert and reformat for incorporation into GIS systems. All of the data contained in the Map-by-Map Directory now resides in a database on a high-performance computing platform. This database captures all the nuances of the original directory, but disentangles their logical, semantic structure from the typographic conventions required by the printed volume. For example, where the directory adds a question mark after a name to indicate uncertainty about whether it should be assigned to that particular place, the database stores this information in two separate fields, one for the name itself, and another to record degree of certainty. Similarly, where the directory uses roman type for ancient names and italic type for modern names, the database contains one field for names and a second to indicate whether the name is ancient or modern.

Organizing the attribute data into discrete categories that can be related without conceptual overlap makes it possible for GIS users to exploit information about each place to answer their own questions. For example, one could plot all sites in a region whose ancient name is certain and contains a linguistic element indicating “safety” or “protection.” From there, one could determine which types of sites (forts perhaps) are statistically most likely to include that root in their name. Further analysis might show that both forts and settlements in particular types of landscape settings are likely to have such a name, but only during a particular period.

The Center is also assessing how a GIS can incorporate the rest of the spatial information and attribute data contained in the maps, including the extensively reconstructed shorelines, drainage networks, and terrain elevations. Initial tests have shown that it takes about twenty hours to carry out the format translation and registration of points and linework on a typical *Barrington Atlas* map that is already in digital form, plus the time for checking and verification. We are still trying to estimate the more tedious tasks of reassociating label text with registered objects and extracting the attribute data associated with type and symbol styles. Registration and vectorization of the conventionally produced maps is expected to be the most time-consuming task of all.

As Anne Knowles points out in her introduction to this volume, successful historical GIS projects require a heavy investment in data collection and classification combined with tools and techniques for spatial analysis,

modeling, and data aggregation. To serve the spatial data and analysis needs of the ancient history and classics communities, we are developing a public, collaborative workplace for the study of ancient geography that will capitalize upon the organized assemblage of data now presented in paper form through the *Barrington Atlas*. This GIS will provide more than just the collaborative visualization and analysis tools currently available in other collaborative GIS environments; it will also facilitate collaborative management, update, and creation of new spatial data by enabling any interested individual to propose changes and additions to the core *Barrington Atlas* data. These public proposals will be vetted through a process of online peer review, in a manner similar to that now employed by the Suda Online (SOL) project.⁶ Where SOL facilitates the public translation, editing, and review of entries in an important Byzantine encyclopedia, our GIS (dubbed Pleiades after the daughters of Atlas) will permit students, researchers, and private enthusiasts from a variety of disciplines to suggest changes, additions, and deletions to any of the data, ranging from a single attribute value for a single site to spatial coordinates for a large group of objects. These proposals will be open to critique and improvement by other Pleiades users until they are finally accepted or rejected by the Pleiades editorial board.

Once Pleiades is online, a student reading Demosthenes in the Perseus Digital Library⁷ will find instant guidance on the questions of “Which Apollonia and why?” (Plate 13.7). This guidance will arrive on demand because the geographic visualization tools already built into Perseus and other systems will combine information from digitized historical commentaries with the continuously updated authoritative geographic data Pleiades will provide.

Our vision also extends to the cultural historian who will use the Pleiades system to find and analyze the data needed to reassess Roman occupation of the Po valley. Pleiades will give this person access to a digital elevation model derived from Shuttle RADAR topography data and digitized World War II aerial photographs from the ADEPT collection.⁸ A link to the Electronic Cultural Atlas Initiative would bring up a GIS data set assembled by a European research team, showing patterns of landholding in the Po valley during the Middle Ages. Pleiades will also provide, from its own database, a GIS data set locating known Roman-era settlements in the valley, together with names and an up-to-date bibliography for each.

Thanks to the happy convergence at this moment of mature GIS technologies, a high-quality data set already moving to digital format, and an increasingly interconnected world, there is at last the opportunity to redress the lack of a strong spatial component in the study of ancient history. The other contributions to this volume make it abundantly clear that the Ancient World Mapping Center is neither alone in sensing such opportunities, nor

without seasoned guides and companions for the journey.

Notes

- 1 *On Halonnesus*, 7.28; Loeb translation by J. H. Vince.
- 2 The development of the division between classics and geography/cartography, and the various attempts to redress it, are traced in R. J. A. Talbert, 'Mapping the classical world: Major atlases and map series 1872–1990,' *Journal of Roman Archaeology* 5 (1992): 5–38.
- 3 R. S. Bagnall (ed.), *Research Tools for the Classics: The Report of the American Philological Association's Ad Hoc Committee on Basic Research Tools* (Chico, CA, 1980), 27.
- 4 *Map-by-Map Directory* (2000), 1292.
- 5 Compilers continued to prepare Mylar overlays from the printed film. When the compilation overlays arrived at MapQuest.com, the cartographers scanned the Mylar and film compilations, reregistered them with the basemap materials, and moved all the layers to a graphic editing program, where the compilers' additions were vectorized, deletions and changes made to the base layers, and styles and typography applied. GIS processing was also used to produce the tinted, shaded relief of the six introductory maps.
- 6 Suda Online: www.stoa.org/sol
- 7 Perseus Digital Library: www.perseus.tufts.edu
- 8 Alexandria Digital Earth Prototype: www.alexandria.ucsb.edu

Further reading

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Online resource

Hill, L., et al. *Alexandria Digital Library Gazetteer Development Information*, Alexandria Digital Library Project: alexandria.sdc.ucsb.edu/~lhill/adlgaz

Anne-Maria Wittke, Eckart Olshausen,
 Richard Szydlak, *Historischer Atlas der
 antiken Welt. Der Neue Pauly.
 Supplemente Band 3* (Stuttgart/Weimar:
 Metzler, 2007). Review in *Bryn Mawr
 Classical Review* 2009.07.22

John Pendlebury (1904–1941), archaeologist and hero in the *Boy's Own Paper* mold, was right when he warned of the passion that maps can generate: "Never if you can help it display a map before a Greek," he advises on the opening page of his *Travelling Hints*, explaining: "I did so once and the man leapt at me with a short howl, yelled for his friends who promptly appeared from nowhere, and with them tore the map from my hand. Within a minute they had settled down to a five days' quarrel over the places mentioned on it, a business no less keen because one half could not read Latin characters and the other half could not read at all. Within five minutes the map was unrecognizable."¹

To be sure, the present set of maps is far from meriting such uncouth treatment, even if it ultimately fails to fulfill the initial high expectations raised by the volume's handsome appearance. It is, after all, a substantial component of a major encyclopedia project (*Der Neue Pauly*), in outsize format, its maps lavishly presented in an extensive color palette, and its three co-editors all established figures in the fields of ancient history and cartography. In chronological scope the atlas aims to match DNP, with a span from the third millennium BC in Mesopotamia to the fall of Constantinople in AD 1453. The core comprises 127 pages of maps in color; these are grouped broadly speaking by successive time periods, except for a cluster at the start relating to worldview and exploration (pp. 2–9, the worldviews re-created very traditionally, and all oriented North according to modern convention).

Typically, each map page is paired with a facing page of text and bibliography relating to the area or theme mapped; space is also found on these text pages to accommodate 44 other maps of varying size, all of them uncolored. Frontmatter is brief: preface (one page); table of contents (4 pp.); breakdown of the maps by area, culture and period (3 pp.); guidance on use of the atlas, and its transcription of alphabets (2 pp.); abbreviations (5 pp.). Endmatter comprises the continuation of bibliography and tables too extensive to fit within the core of the atlas (19 pp.); a map-by-map listing of the contributor(s) responsible for each, with (where appropriate) details of the previously published map adapted or reproduced here; finally, a gazetteer (33 pp.).

There is much to admire and praise. The mere provision of an atlas is a pathbreaking initiative in the evolution of the Pauly encyclopedia over the past century and more; none accompanies the behemoth Pauly, nor its handy successor *Der Kleine Pauly*. The amount of effort expended by Wittke and Olshausen (by far the principal contributors) and fifteen fellow scholars is manifestly prodigious. At the same time, thanks no doubt to equal dedication by Szydlak, the style of presentation for the maps (including their elevation tints) is impressively consistent, a boon to users. In fact this presentation matches that of the *Tübinger Atlas des Vorderen Orients* (= TAVO, 1969–1993), in which Wittke, Olshausen and Szydlak were all involved. The map “Das Palmyrenische Sonderreich (250–272 n. Chr.)” (221) well displays this cartography’s strengths. Central placement of Palmyra within the frame highlights the city’s strategic location in the zone where the Roman and Persian empires meet. Colors readily distinguish the areas claimed by each empire, with hachuring overlaid to demonstrate the remarkable extent of Palmyra’s conquests. Route linework in further colors traces Odenath’s offensives against Ctesiphon, Zenobia’s forays into Asia Minor and Egypt, and Aurelian’s retaliatory attack on Palmyra. Nowhere is the map cluttered; the scale adopted is appropriate to the quantity and range of names chosen for marking. Symbols and lettering fonts, too, are clear and suitably sized. The accompanying text summarizes first the nature and development of the Palmyrene state, and then its rapid rise and fall in the third century. In the paragraph summarizing the sources a further sentence would have been desirable, to draw attention to the fragment of Peter the Patrician which preserves the story that Odenath had sought to side with the Persians, only to be rejected by Sapor (frag. 10 = FHG IV, p. 187). Overall, given the unfamiliarity of Palmyra to most students of the third century, the map and text offer informative assistance.

The pity is that the sound cartographic principles reflected by this map have too often been over-ridden elsewhere. Surprising though it seems (and unexplained), only one map (8–9, “Fernerkundung in der antiken Welt”) and

the two endpapers (showing physical landscape) occupy a double spread. Otherwise all the maps are limited to a single page at most, and frequently less than that in practice because many Key boxes claim considerable space. Such a frame of no more than approximately 7.75×12 ins (20×30 cm) must have proven a source of repeated frustration. It is nowhere near adequate for presenting Alexander's campaigns satisfactorily, for example, or Rome's three wars against Mithridates VI, as the maps on 113 and 159 strive to do. Both in fact derive from TAVO sheets B V 1 (1985) and B V 6 (1981) respectively, where the main maps measure 12×26 ins (30×66 cm) and 17.25×22 ins (44×56 cm), with insets in addition for local detail. In the atlas, the olive-colored lines on the Alexander map (for various generals' forays) serve to confuse users more than inform them, while the congestion within Asia Minor on the Mithridates map renders the region meaningful only to the most conscientious of users. In other instances, too, the maker of a map has chosen to proceed oblivious to the inadequacy of the scale determined for it, overcrowding certain areas regardless rather than exercising restraint or adding an inset. As a result, users will be baffled, not enlightened, by Sicily on 93 (Karte B) and again on 138, for example; Cyprus on 115; central Greece on 119 and again on 135; the area south of Lake Tiberias on 123; and that of modern Tunisia on 147. The inadequate scale for showing the sources of marble (84) leaves the unfortunate impression that the Gebel Fatireh (= Mons Claudianus) quarries were on the Nile or very close, when in fact they are situated more than seventy punishing miles distant from the river.

The use of standard physical bases for maps is a prudent and practical expedient (also followed by TAVO), but flexibility in its application is sometimes lacking. On "Roms Kriege im Osten I (214–129 v. Chr.)" (151), the mismatch between the density of coverage eastwards to the Hellespont and the map's emptiness thereafter (for the full length of the Black Sea) calls for the frame and scale to be rethought. Similar rethinking is in order for the second of the maps on these wars (153) so as to enlarge the presentation of western Asia Minor there. By contrast, a full page for the Iberian peninsula on "Roms Kriege im Westen (206–101 v. Chr.)" (149) leaves that map too empty, because (as the accompanying text explains) the surviving sources lack sufficient detail for us to follow the course of these campaigns closely.

Several instances where the scale chosen could have permitted a more informative presentation are to be found in the maps of Roman provinces (either single ones, or an adjacent group). These maps are intended to illustrate shifts in the provinces' extent and boundaries from their annexation as early as the third century B.C. through the fifth century A.D. Altogether an astonishing amount of space (both map and text) is devoted to this theme, and the results hardly justify it. The case of Sicily (143) is especially striking. Nowhere else in

the atlas is the island presented anywhere near as large, and yet here the map's sole concerns are changes in the boundary of the province (actually just a single, early change in over seven centuries, when Hiero II's kingdom was annexed) and the legal status of the leading cities under Roman rule; the use of color for this map is redundant therefore. So much more data could have been added, and to do that would have been easy because, ironically, the map is in fact a stripped down version of an uncolored forerunner "Die römische Provinz Sicilia (ca. 241 v. Chr. – 535 n. Chr.)" which illustrates the DNP entry 'Sicilia'. There, rivers are named, villas marked, and roads and aqueducts traced. The villas include Piazza Armerina, which is nowhere marked in the atlas even though DNP includes an entry for it, with a plan too. Meantime a column and a half on Sicily's text page in the atlas (142) is left an unused blank. The bibliography there, moreover, is a miscellany that seems to be lifted uncritically from DNP 'Sicilia'; too many specialist items are retained, including an unpublished dissertation by Goldsberry (1973, not 1982), and a 1955 article about the Panormus-Agrigentum road even though the map omits roads. For the latter in any case it would surely be more appropriate to cite the monograph by G. Uggeri, *La Viabilità della Sicilia in Età Romana* (Rome, 2004). By the same token, further invaluable citations missing from the atlas bibliography (none of them included in the DNP entry either) are E. Manni, *Geografia fisica e politica della Sicilia antica* (Rome, 1981); G. Nenci and G. Vallet (eds.), *Bibliografia topografica della colonizzazione greca in Italia e nelle isole tirreniche* (Pisa and Rome, 1977–ongoing); and the periodic syntheses in *Archaeological Reports* (the latest by F. De Angelis, 2007).

This unsatisfying presentation of Sicily in the atlas raises the larger issues of the broad goals envisaged for the volume and of its intended relationship with DNP. A claim to stand alone is made, but then immediately qualified (XIII): "Der Atlas ist als eigenständiges Werk konzipiert, kann aber auch gut in Verbindung mit den alphabetischen Bänden genutzt werden." The Vorwort (V), especially in its section "Voraussetzungen", affirms close linkage with DNP's scope, approaches and materials; indeed it is stated that about sixty per cent of the maps derive from the encyclopedia (which is printed without color throughout). In these entirely justifiable circumstances, therefore, the puzzle arises that a closer meshing was not arranged. Instead, time and again – as in the case of Sicily – we find bibliography appended to the alphabetic entries needlessly repeated in the atlas, not to mention occasional lists of rulers (216, 218, 264) which *Supplemente 1* (2004) already offers in full. Equally, the excessive space found for tables of text references documenting shifts in the extent and boundaries of Roman provinces – including the full nine pages 265–73 – could have been put to far better use in an atlas with the provision of more maps. For example, the course of Xenophon's *Anabasis* is an ideal

cartographic theme, and it is duly mapped in the DNP entry 'Xenophon', but the atlas declines the opportunity beyond incorporating an easily overlooked thumbnail sketch within the map "Fernerkundung in der antiken Welt" (8). Another natural choice is a map to illustrate the democratic process in classical Athens; again the atlas offers none, even though the map "Attische Phylen (nach 508/7 v. Chr.)" could be lifted from DNP 2 (1997) 237–38 and greatly enhanced by the addition of color. The inclusion of such a map could also only help to redress the imbalance that the atlas as a whole may be perceived to reflect in favor of Roman civilization against Greek. Altogether the number of city-plans offered by the atlas is disappointingly small (see list, XII), and curiously so when many more could just have been lifted from the relevant alphabetic entries and Nachträge, among them Delos, Hattusa, Olympia, Pergamum, Pompeii, Portus (Ostia), Priene, Syrakusai, Veii; even provision of a full list of such plans in DNP would be a most welcome enhancement of the atlas. Again, reproduction of DNP's upper plan of Troia (12/1 [2002] 859–60) with color added could help immensely to distinguish periods VI, VIIa and VIIb there.

Incorporation of maps already in DNP aside, the atlas presented greater opportunities for extending DNP's range of maps than were taken. True, the map "Die drei grossen Missionsreisen des Paulus" (228) is a useful such extension, though it is a puzzle that the final journey to Rome should be entirely omitted (despite its mention in the accompanying text), and a pity that the map could not be in color, allowing more distinctive differentiation of the three journeys. A clear instance of an opportunity for extension of DNP not taken at all is the lack of a city-plan to supplement the short entry for Thamugadi. Equally, Hadrian's travels remain without a map, even though DNP 'Hadrianus' includes a section "Die Sorge um das Reich – Die Reisen." On 149, as mentioned above, the scale for illustrating Rome's second-century campaigns in the Iberian peninsula could readily have been reduced, and space found for an inset of Numantia ringed by Scipio's nine siege camps, which DNP's entry for the site specifically mentions but does not map. More generally, the atlas might have opted to overcome DNP's unexplained reluctance to admit battle-plans, but it silently preferred not to, and that will be further cause for disappointment to many (note that the Rezeption volume 15/2 includes the entry 'Schlachtorte'). Ironically, DNP 'Kalkriese' includes a half-page plan which would look even more appealing in color. The atlas, however, despite its German origin not only omits this plan, but also never even marks either Kalkriese or Saltus Teutoburgensis.

The Vorwort avows a commendable commitment to developing non-traditional cartographic themes, but again some striking opportunities are missed. For example, DNP 'Bodenschätze' offers a map "Mineralische Rohstoffe

in der Ägäisregion (ca. 4000 – nach 1100 v. Chr.),” derived from TAVO A II 2 (1990) which stretches on eastwards as far as Afghanistan and the Indus valley. The basis for extending the limited coverage of the DNP map in the atlas, and in color, was to hand therefore, but no such initiative was taken.² No more was the lengthy “Chronologische Tabelle antiker Wracks (2 Jt. v. Chr. – 7 Jh. n. Chr.)” in DNP 12/2 (2002) 579–90 made the opportunity for a map – an enhancement potentially all the more valuable because no map accompanies ‘Unterwasserarchäologie’ (DNP 15/3 [2003] 922–29) either, even though this is a new field to which the Vorwort (1 [1996] V) specifically commits DNP.

It is cause for regret that the makers of the atlas chose not to elaborate upon how they mean to serve their intended audience. According to their Vorwort, they envisage this as spanning an ambitious range, across the entire spectrum from classical scholars to students and non-professional enthusiasts. Everywhere along it, however, there is liable to be disappointment felt for a variety of reasons. Scholars consulting a work of reference reasonably hope to be informed about the nature and value of comparable existing tools, and about how the present one orients itself in relation to them. The Vorwort does draw attention to the *Barrington Atlas of the Greek and Roman World* (though not its *Map-by-Map Directory*) as an essential resource for topography, but nothing at all is said here of the *Tabula Imperii Romani*, for example, or *Tabula Imperii Byzantini*, let alone of *The Helsinki Atlas of the Near East in the Neo-Assyrian Period* (2001).³ Even TAVO is taken for granted, although it is in fact unfamiliar to most scholars outside Germany; a paragraph or two about its nature and scope would be fully justified. More generally, no reference is made to the DNP entries ‘Kartographie’ or ‘Kartographie (Rezeption)’, still less to my analysis “Mapping the classical world: major atlases and map series 1872–1990,” *JRA* 5 (1992): 5–38. Scholars may be irked when the texts in the atlas are no more than loosely related to the maps they are placed to illuminate, as in the case of the text for “Städtegründungen und Bildungsstätten (4. bis 2. Jh. v. Chr.)” (118–19), for instance. It may not please scholars either that the sections headed “Die Quellen” seem unduly prone to give primacy to texts, while considering other materials and sources of knowledge as secondary. Scholars may query the unexplained decision to maintain the coverage of the atlas so far beyond the end of antiquity to the fall of Constantinople. Granted, DNP itself does extend as far, but only for Rezeption. Thus there are entries ‘Karolingische Renaissance’, for example, and ‘Paläologische Renaissance’, but none for Karl der Grosse or individual Palaiologoi, or for the Crusades. In practice the coverage of the millennium from AD 500 that the atlas offers remains very limited – with a map devoted to the first three Crusades (249), for example, but none of Charlemagne’s empire. It might have been more useful, and still sufficiently in line with DNP’s scope,

to settle for a cut-off date well before 1453, and to expand the coverage for earlier periods.

One divergence from TAVO's practice that all users are likely to regret is the (again silent) decision never to state any map's scale in figures (1:2,000,000 aut sim.) as well as by means of a scalebar. It goes almost without saying that such a statement of scale is useful not only when examining any map but also for comparing it to related ones.

In view of the unavoidably high price of the atlas, it may seem optimistic of its makers to hope that it will see much use by students and enthusiasts. Should these learners gain the chance, however, they are likely to have mixed reactions. Maps showing all or part of the Italian peninsula they should find instructive. These often incorporate the physical landscape informatively and tend not to be overloaded with cultural data: the map "Sprachen im alten Italien vor der Ausbreitung des Lateins" (67) is an attractive example. Less useful by contrast are maps where the complete lack of elevation omits a vital element in learners' understanding, as in the pair "Die hellenistischen Königreiche Indo-Baktriens im 2. und 1. Jh. v. Chr." (133), which stretch from the Indus delta high up across the Hindukush and then north down again to the Aral Sea. Learners will certainly appreciate the four maps which chart the growth of the Kingdom of Pergamum from 241 to c. 185 B.C. (125). All but the most methodical, however, will be deterred by maps which seek to distill an indigestible succession of developments. As many as six Syrian wars (275/74–168 B.C.) form the subject of a single map (123, derived from TAVO B V 16.1), for example. "Die territoriale Entwicklung des Imperium Romanum in republikanischer Zeit" (141) distinguishes nineteen stages by date, and "Die Entwicklung der römischen Provinzen in Kleinasien (2. Jh. v. Chr. bis 5. Jh. n. Chr.)" (183) tops that with twenty-one. Today, such sequences are obvious themes for presentation electronically with overlays that can each be added to a map or removed at will. Almost all students are sufficiently conversant with the use of computers to be aware of this capacity, but they will search this atlas in vain for even a passing reference to digital mapping, let alone for even the briefest discussion by its makers of how they see the new technology influencing and reinforcing their aims. In the era of Powerpoint, GIS and Google Earth, such complete detachment seems unfortunate to say the least. When Rome's Marble Plan is cited (174), no reference is made to the indispensable Stanford Digital Forma Urbis Romae Project. Similarly, in connection with the impressive overviews of roads across the Roman empire (195–99, mostly from DNP 'Strassen' and 'Viae Publicae'), attention is not drawn to the various versions of the Peutinger Map accessible on the web. Much less is there recognition of the interactive maps now available that enable students to trace the course of campaigns and battles in particular (see

notably The Mapping History Project).

Ever since 1579, when Abraham Ortelius created a supplement ('Parergon') of classical and biblical maps and attached it to his innovatory *Theatrum Orbis Terrarum*, the makers of historical atlases have struggled to achieve a satisfying balance of timeframe and themes, map and text. Their efforts are a dominant theme of Walter Goffart's detailed study *Historical Atlases: The First Three Hundred Years, 1570–1870* (Chicago, 2003), which confirms – predictably enough – that no ideal solution is attainable. Every atlas, like every map, is perforce a set of compromises, the product of multiple choices. In their ambitious endeavor, Wittke, Olshausen and Szydlak make many sound choices and offer much of value. But the sense lingers of opportunities missed, potential not fulfilled, mismatch of material and its intended audience. More effective integration with DNP could have been developed by the historical atlas intended to supplement it; text and bibliography could have been subordinated more to maps. Last but far from least, especially in an atlas which proclaims its commitment to new ways of approaching antiquity, all engagement with information technology and digital mapping should not have been evaded. For a masterly appreciation of how the computer revolution only complicates the bewildering array of choices that the creative mapmaker already has to navigate, one could hardly do better than re-read Denis Cosgrove's (1948–2008) wide-ranging Introduction to his edited volume *Mappings* (London, 1999). Even so, as Cosgrove himself recognized, the new challenge is one to be welcomed and exploited; a twenty-first century atlas which sets it aside falls short.

Notes

- 1 From the volume *John Pendlebury in Crete*, p. 1, printed by Cambridge University Press in 1948 for private circulation. For his exploits, see now Imogen Grundon, *The Rash Adventurer: A Life of John Pendlebury* (London, 2007).
- 2 Note further in this connection A. Orejas (ed.), *Atlas historique des zones minières d'Europe* (2 vols., Luxembourg, 2001, 2003).
- 3 Note the review of the Atlas by S. Richardson, *Journal of Near Eastern Studies* 65.2 (2006): 125–27.

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